

35 CENTS

CONSTRUCTION

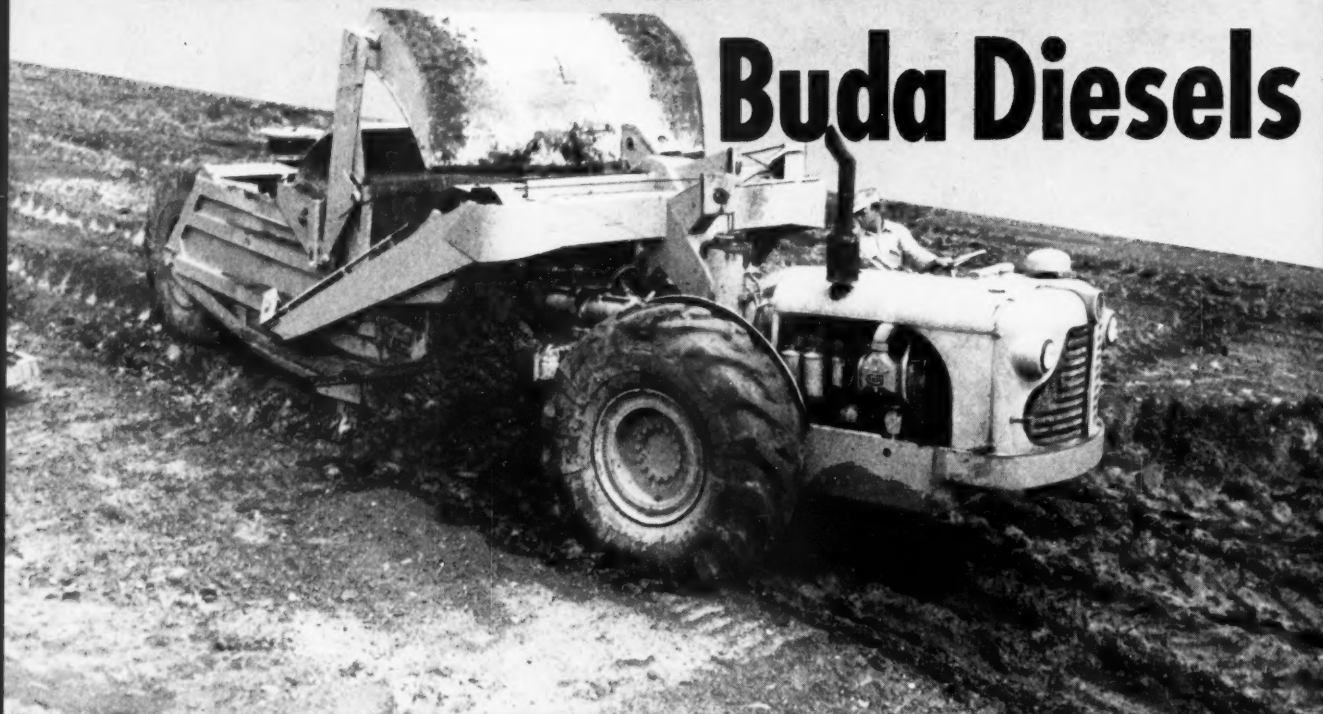
METHODS AND EQUIPMENT

October 1953



A MCGRAW-HILL PUBLICATION

BIG DISPLACEMENT Buda Diesels

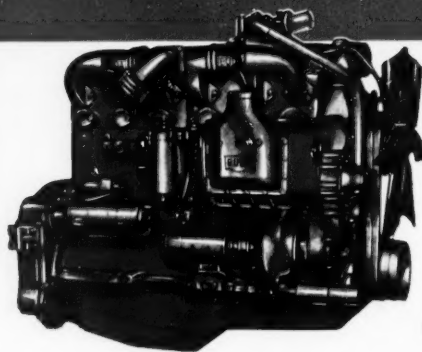


...mean faster loading, traveling, spreading

**MORE POWER...GREATER
TORQUE PAYS OFF IN
MORE PRODUCTION
FROM EVERY UNIT**

The *extra* piston displacement in Buda Dyna-Swirl Diesels gives your equipment more power and higher torque . . . resulting in more trips per hour and lower costs per yard of dirt moved. Buda Diesels are heavy duty workhorses—built to stand up to tough service . . . to keep delivering maximum horsepower with less maintenance and downtime.

You need all the power you can get for dozers, scrapers, tractors, shovels and trucks—and you can get *more* power from Buda Diesels.

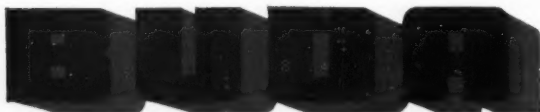


**6-DAS-844 Supercharged
280 HP at 2100 RPM**

- **12 to 18% MORE HORSEPOWER** at normal operating speeds
- **10 to 17% HIGHER USEABLE TORQUE** for greater lugging ability
- **Dyna-Swirl Combustion** gives more power per gallon of fuel . . . less fuel for more power
- **6000 or more hours of operation** between overhauls . . . lower maintenance costs per hour of operation
- **Smooth, quiet operation** . . . less exhaust fumes and smoke . . . less vibration . . . more operator comfort



**a Power-Full and Dependable Engine
FOR EVERY NEED**



Manufacturers of Material Handling Equipment, Lifting Jacks, Maintenance of Way Products, Earth Drills and Wind and Gasoline Engines

RESEARCH KEEPS

B.F. Goodrich

FIRST IN RUBBER



One belt does the work of 3— hauls 900 tons an hour uphill

GETTING iron ore out of a deep pit like this used to call for a series of three or more conveyor belts. No one belt was strong enough, flexible enough to haul that far, that steep.

Then B. F. Goodrich developed steel cord construction. In this exclusive belt design, individual steel cords run lengthwise, each completely surrounded by rubber. These parallel cords give tremendous strength, yet are flexible so that troughing is natural, belt keeps centered on idlers, spillage is held to a minimum.

With steel cord construction, a single-flight conveyor now does the job of three or four belts on high lift, long distance installations. Money is saved, handling is faster because the steel

cord belt eliminates the transfer point necessary with a conveyor system built in several stages with ordinary belts.

Extraordinary records made by the B. F. Goodrich belt on other "impossible" jobs convinced this mining company it would stand the strain on this one. The B. F. Goodrich steel cord belt was installed, and has been at work ever since—summer and winter—hauling 900 tons an hour up the steep incline.

If you need a conveyor belt that must take severe impact on loading, and haul heavy loads up steep inclines, let your local BFG distributor show you how a B. F. Goodrich steel cord belt can do the job more efficiently and at lower cost than a system

built in several flights. Or send the coupon below for more information.

The B. F. Goodrich Company
Dept. M-105, Akron 18, Ohio

Without obligation, please send information on:

☐ steel cord belts.

☐ other products (name type) _____

☐ Have a BFG distributor see me.

Name _____

Company _____

Address _____

B.F. Goodrich
INDUSTRIAL PRODUCTS
DIVISION

STRIPPING TOP SOIL

is another job this versatile unit does well. The simple rugged design of the Ware loader correctly distributes weight on tractor frame, regardless of the operation being performed. Down-pressure can be applied when it is necessary in tough digging. Hydraulic rams absorb shock loads . . . mean longer life and lower maintenance for both tractor and loader.



Picture Your Profits... with this **OLIVER** Hydraulic

An Oliver Industrial Wheel Tractor with this *all-hydraulic* front-end loader is a combination that's hard to beat for low-cost, profitable operation. With any Oliver Wheel Tractor, you get famous Oliver dependable plus power, easy maneuverability, rugged construction. With the loader, manufactured exclusively for Oliver Wheel Tractors by Ware

Machine Works, you get completely hydraulic operation which means easier, surer control for faster more efficient digging and loading. Take a look at the "profit pictures" shown here. They'll convince you that it's well worthwhile to ask your Oliver Industrial Distributor to arrange a demonstration of an Oliver tractor-loader combination for you.

THE **OLIVER** CORPORATION

400 W. Madison St., Chicago, Illinois

A complete line of Industrial Wheel and Crawler Tractors



HYDRAULICALLY CONTROLLED BUCKET

assures greater "breaking-out" action—full bucket loads every time. 28° roll back helps prevent wasteful spillage.

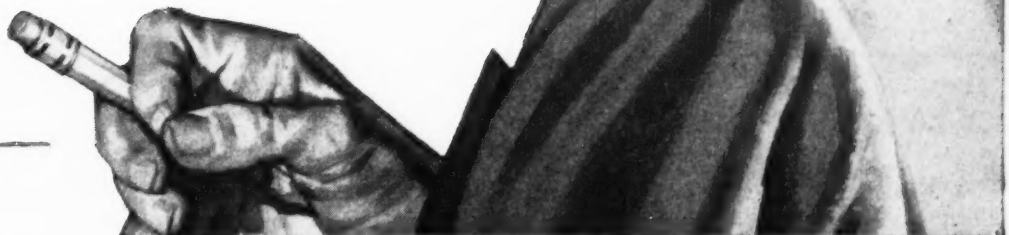


DISCHARGE IS FAST OR SLOW

depending on how you want it. Hydraulic controls make this possible. Mid-section pivot of loader arms give longer reach in dumping position.



Tractor-Loader



GREATER SAFETY FOR MEN WHO
PREFER METAL HEAD PROTECTION

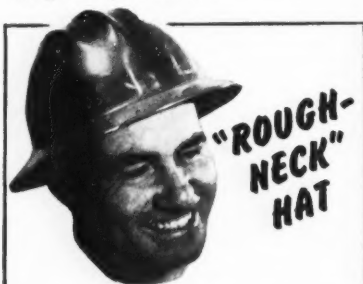
BULLARD ALUMINUM SAFETY CAPS & HATS

Famous Bullard shock-absorbing, safety, ribbed crown design now available in rugged aircraft grade aluminum Caps and Hats • Light, strong, comfortable • Exceed 40 pound drop test for resistance • Satin, permanent, no-glare finish • Exclusive Bullard hammock-headband assures proper fit, ample head space and air circulation. Standard winter liners and chin straps fit all models



"SHORTY" CAP

Visor protects the face. Flared brim keeps ears and neck safe from falling objects. No wide brim to interfere with carrying or working in close quarters. Weighs only 10 ounces.



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CALIFORNIA
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TM REG. U.S. PAT. OFF

CONSTRUCTION

METHODS AND EQUIPMENT

Volume 35, Number 10

OCTOBER 1953

Established 1919

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October 1953

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84 FLOORS concreted with 'INCOR' in 69 WORKING DAYS

*Tight Schedules and
Dependable 'Incor'
Performance
Save Time, Cut Costs
to the Bone*



ST. NICHOLAS HOUSES—SECTION 3

Owner: NEW YORK CITY HOUSING AUTHORITY

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C. E. YOUNGDAHL & COMPANY, INC., Long Island City
JAMES McHUGH CONSTRUCTION CO., Chicago, Ill.

Architects: YORK & SAWYER, New York

Structural Engineers:
SEVERUD, ELSTAD & KRUEGER, New York

Ready-Mix 'Incor' Concrete:
JAMES A. NORTON, INC., New York

● Emphasizing utmost value for the public's building dollar, the New York City Housing Authority has encouraged many advances in building techniques, outstanding among which is widespread use of reinforced-concrete-frame construction.

Recent example is Section III, St. Nicholas Houses—six 14-story-and-roof units . . . first pour, March 22, 1953, topped out June 30 . . . 84 floors concreted by C. E. YOUNGDAHL & COMPANY, INC., in 69 working days.

Maximum job speed and economy, due to tight schedules, based on dependable 'Incor'* 24-hour stripping strengths . . . engineered forms, built to closest tolerances for streamlined erection efficiency . . . expert utilization of skilled work force.

Further proof that sound planning and open-minded co-operation among Designer, Builder and Owner make it possible to obtain the fire-safety and structural soundness of concrete, at costs and erection speed which equal or beat any other type of construction.

*Reg. U. S. Pat. Off.



LONE STAR CEMENTS COVER
THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 129,000,000 SACKS ANNUAL CAPACITY



4 Powerful Reasons Why **CHEVROLET** ADVANCE- DESIGN **TRUCKS** work harder . . . work longer . . . work for less!

MORE POWER AT LOWER COST! You can look forward to sizeable savings on gasoline with Chevrolet trucks on the job. In heavy-duty models, the advanced Loadmaster engine with new high-compression ratio of 7.1 to 1 delivers more power than ever—and does it on less fuel! In light- and medium-duty models, Chevrolet's Thriftmaster engine combines top-notch performance, with rock-bottom operating cost.

TAILORED TO YOUR JOB! Of course you want a truck that fits the requirements of your particular job. And you get just that when you buy a Chevrolet truck! You get the *right* power . . . the *right* chassis units from tires to transmission. Chevrolet trucks are *factory-matched* to do your work at lowest cost!

RUGGED AND RELIABLE! These great 1953 Chevrolet Advance-Design trucks are built stronger to stay on your job longer! Frames, for example, are sturdier and more rigid. And you'll find extra strength in other vital places, too. The result is a truck that gives you extra miles and months of low-maintenance operation.

LOWEST PRICED LINE! You start saving money the moment you buy a Chevrolet truck. For, in addition to all its other advantages, Chevrolet is *America's lowest priced truck line!* Why not start saving *now!* Your Chevrolet Dealer will be happy to give you all the facts. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—the Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load. **POWER-JET CARBURETOR**—for smooth, quick acceleration response. **DIAPHRAGM SPRING CLUTCH**—for easy-action engagement. **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **HYPOID REAR AXLE**—for dependability and long life. **TORQUE-ACTION BRAKES**—on light-duty and medium-duty models and on front of heavy-duty models. **TWIN-ACTION REAR BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—for greater holding ability on heavy-duty models. **CAB SEAT**—with double deck springs for complete riding comfort. **VENTIPANES**—for improved cab ventilation. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—for easier handling. **UNIT-DESIGNED BODIES**—for greater load protection. **ADVANCE-DESIGN STYLING**—for increased comfort and modern appearance.



BINS TO FILL!

ROAD WORK ahead! And lots of it for years to come! That means bins to fill.

There isn't anything snappier in action with a clamshell than a Northwest. Control is easy... smooth. The "Feather-Touch"

Clutch Control eliminates operator fatigue. It's mechanical! No pumps, compressors, valves, tubes or other delicate mechanism to get out of adjustment and shut down operation.

Uniform Pressure Swing Clutches eliminate the jerks and grabs that set a load swinging and slow up spotting or increase spillage—they assure gentle, sure, accurate action that gives a man full control of the bucket.

Northwest mobility makes relocating easy with the minimum waste of time. On the larger Northwests where greater weights are a factor, positive traction on both crawlers, while turning as well as when going straight ahead, negotiates haul road conditions without the ground tearing action of ordinary crawlers.

If you are going to have bins to fill, take a look at Northwest—there is nothing faster with a clamshell.

NORTHWEST ENGINEERING COMPANY

1503 Field Building
135 South LaSalle Street
Chicago 3, Illinois

MAKE IT EASY WITH

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS



B.F. Goodrich



Universal tires roll over jagged slag, can still be recapped!

THIS truck, part of the fleet of the McGraw Construction Company of Middletown, Ohio, dumps 55,000 pounds of slag fill for a new highway. The following truck must roll over this slag, often jagged and sharp-edged as broken glass. Many tires would be torn and cut to pieces after such rugged treatment.

But McGraw uses B. F. Goodrich Universal tires—tires that take such rough work so well, the company reports, they can actually be recapped! The Universal tread is specially compounded to resist rock cuts and bruises. Husky, wedge-shaped cleats defy snags, give positive traction in either direction.

And Universal tires are built with

the patented B. F. Goodrich nylon shock shield. Layers of strong, elastic nylon cords under the tread stretch together to protect the cord body from tire-killing cuts and bruises. Result: Universal tires give you more hours of service, more recappable tires and hours of service per recap, increased bruise resistance and less danger of tread separation. You pay no more for the advantages of the exclusive nylon shock shield.

No wonder Paul J. Thiel of the McGraw Purchasing Department says: "We use B. F. Goodrich tires 100%." There's a B. F. Goodrich tire that saves money on all types of off-the-road work. See the complete line at your

retailer's store. The address is listed under Tires in the Yellow Pages of your phone book. Or mail the coupon below.



The B. F. Goodrich Company
Department TO-137, Akron 18, Ohio

Please send:

- ☐ Catalog on Universal tires
- ☐ Free booklet, "How to get more recaps out of truck tires"
- ☐ Name of my nearest retailer

Name _____

Company _____

Street _____

City _____ Zone _____ State _____

Specify B. F. Goodrich tires when ordering new equipment



T5X guards against breakdowns

To meet tight construction schedules, dump trucks must carry heavier loads for longer hours without breakdowns. That's why so many leading construction companies make sure their engines are protected by heavy-duty T5X motor oil.

Even under the most *severe* operating conditions T5X gives *superior* engine protection. T5X lubrication protects rings, bearings and other moving parts against wear, and greatly extends overhaul periods.

T5X is made from an unusual combination of the finest base stocks and special-purpose compounds. This amazing *purple* oil gives protection against the clogging effects of sludge and keeps engines clean by retarding formation of lacquers and varnish.

Compare T5X with the motor oil you now use. You'll agree with construction men everywhere that T5X lubrication means less wear, lower maintenance costs and greater engine protection under *every* operating condition.

OFFICES: LOS ANGELES: Union Oil Building • NEW YORK: 4904 RCA Building • CHICAGO 1612 Bankers Building
NEW ORLEANS: 644 National Bank of Commerce Building

UNION OIL 76 COMPANY OF CALIFORNIA

October 1953 — CONSTRUCTION Methods and Equipment — Page 9

6 WAYS TO STEP UP RESULTS and PROFITS!



MACADAM CONSTRUCTION

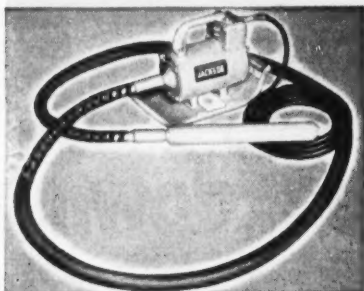
In one pass the Jackson Multiple Compactor will compact 12" of rock to support smooth rollers. In 4 passes compaction to final density may be obtained. With 2 passes all voids from top to bottom can be filled with fines. In gravel sub-bases 7" thick, one pass suffices to produce densities exceeding 100% Standard Proctor. Working speeds from 0 to 60 ft. per minute. 5 1/2 MPH travel speed.



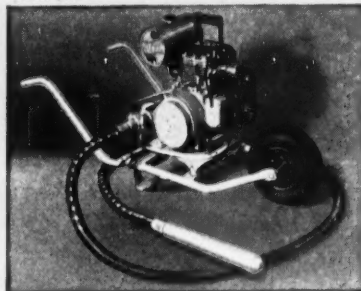
SOIL COMPACTION. The powerful, new, self-propelling Jackson Compactor, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 8" to 10" depths at 2400 sq. ft. per hour. Perfect for bridge and pipeline fills, concrete floor sub-bases, etc.



BLACKTOP WIDENING & PATCHING. The same machine, operated from power plant on auto-trailer with pickup for Compactor, is most efficient means of blacktop pavement widening and patching, paving walks, drives, etc. Compacts 2400 sq. ft. per hour, close to maximum density.



GENERAL CONSTRUCTION. (left); 6 H.P. engine driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 2 1/2 H.P. electric vibrator for light socket operation. Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.

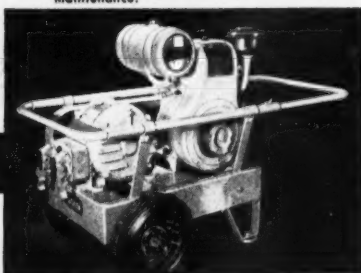


DUAL CURRENT PORTABLE POWER for operating all Jackson machines and lights. 1.5 to 7.5 KVA, providing both single and 3-phase 60 Cy., 120 V. AC (120/240 V in larger models). Permanent magnet generators require no adjustment or maintenance.

FOR SALE OR RENT AT YOUR JACKSON DISTRIBUTOR

JACKSON VIBRATORS, INC.

ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON, MICHIGAN



* JOB TALK *

... Equipment and Safety



High Frame Sets Poles

Sisco Electric Co. has a contract to construct 159 mi of rural electric transmission lines for Western Oklahoma farms. Some 109 mi of the contract call for a two-pole line and the remaining 50 mi a single-pole line.

Setting the 55-ft poles is a major part of the job. In the case of the double-pole supports, the two poles are joined as a unit on the ground and then lifted into place. Erecting is done with a welded boom of steel tubing some 35 ft high, mounted on the Bucyrus-Erie hydraulic A-frame on an International TD-14 crawler tractor. Sisco sets 2 to 3 mi of poles each day with this compact but powerful setup.

Bullclam Drops Gravel

Northside Construction Co., Memphis, Tenn., saves time and money in the installation of 500 septic tanks for a new homes project by using a crawler tractor to place the right amount of gravel in leaching ditches. Each tank requires 300 ft of discharge line packed with gravel—a big job of filling when done by wheelbarrows over the uneven ground.

The contractor uses a Drott Bullclam on an International TD-14 on the job. The shovel holds 2 yd of (Continued on page 12)



no stops for winter

It gets mighty cold in Minneapolis in February, but that doesn't stop operations for Ray W. Skelton Co., Inc. Their Caterpillar D8 Tractor, equipped with a No. 8S Bulldozer and Esco ripper, is shown excavating a cellar through two feet of solid frost.

That's something to think about when you're buying earthmoving machines. Are you going to have to shut down the job when cold weather comes?

Right there is where owners of Cat* equipment have these advantages:

1. The big yellow machines will work longer into the winter—as long as you want them to work.
2. They'll start quicker in low temperatures.
3. They have the rugged strength to work frozen material.
4. They require no pampering in cold weather.
5. They get the job ready for an early spring start, and have the power and traction to tackle muddy ground.

Prepare for winter now by seeing your Caterpillar Dealer. Make him prove to you by an on-the-job demonstration that you'll get more months of work out of these durable machines. He backs their long, profitable life with genuine parts and reliable service.

Caterpillar Tractor Co., Peoria, Ill.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks. (R)

**WINTERIZE
YOUR JOB WITH
CAT EQUIPMENT**

Rooshor Head

Wood or steel head with holes for nailing into stringers. Roos Extension Shores take any length 4x4 extension.

Wood Upper Member

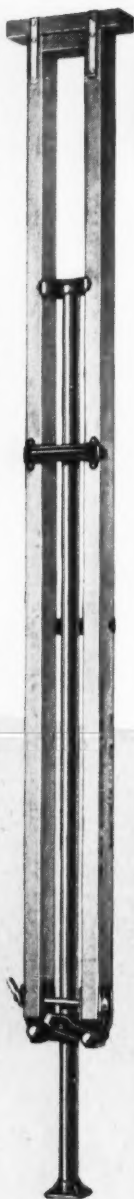
Permits ease in horizontal or diagonal bracing. No problem of placing an extra bracket or hitting a "set" hole in a steel member.

Steel Pipe, Concrete-Filled

1½" steel pipe filled with concrete... will not crush or buckle.

Rooshor Lock With Not Slip!

This exclusive lock acts like a pair of giant tongs—the greater the load, the greater the grip.



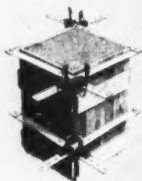
Contractors prefer Rooshors because...

Rooshors save time, material and labor... so naturally they cut costs on all your shoring operations. They are easily set—instantly and accurately adjusted to any fraction of an inch by *only one man*. There are no loose pins and no screw adjustments to become clogged. They have longer adjustment in their range of three sizes: 8 ft. to 14 ft.; 7 ft. to 13 ft.; and 5 ft. to 9 ft.—higher stories are shored with Roos Extension Shores. Rooshors have been used by contractors from coast to coast and in many foreign countries for over 35 years.

Rooshors and Roos Column Clamps are available for rental with purchase option from Warehouse stocks in principal cities. New equipment is for sale FOB factory.

ROOS COLUMN CLAMPS

Roos Column Clamps, consisting of two identical hinged units, eliminate lost time and motion in fitting and adjusting... there is no wrong way to put them on. They have no loose parts to cause needless delays and a hammer is the only tool needed.



BAKER-ROOS, INC.

602 WEST McCARTY STREET
INDIANAPOLIS 6, INDIANA

WRITE TODAY FOR BULLETIN — 253

JOB TALK... Continued from page 10

gravel which is carried to the trench. There the operator opens the bullclam a few inches and drops just the proper amount of gravel needed to pack the discharge line. Northside Construction has eliminated 14 men and wheelbarrows from this operation. In addition, the tractor and bullclam are free at times to do other grading work around the area.

Safety in Stripping Forms

The suggestions below come from the Memphis Chapter of the Associated General Contractors.

(1) Each concrete structure presents its own problems in form building, but certain hazards, such as those due to poor housekeeping, leaving material or tools where they may fall and cause injuries, failure to construct and maintain safe scaffolding, and protruding nails, are common to all forms of work. Most nail accidents are of minor importance, but many of them result in infection and loss of arms or legs. All injuries, no matter how slight, should be reported and treated at once.

All workmen placing concrete should wear hard hats. Shirt



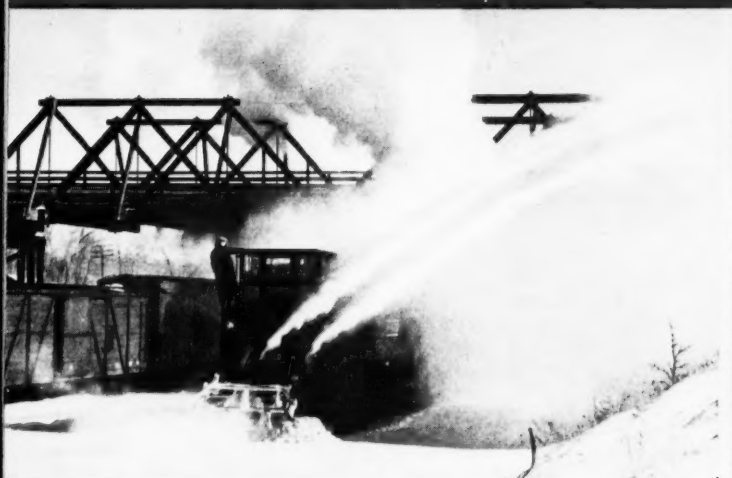
sleeves should be rolled down; gloves should be worn, and every reasonable precaution taken to keep cement and concrete off the skin.

While concreting, there should be one carpenter, or more if necessary, assigned to tighten wedges and see that centering supports are in no danger of collapsing. Mud sills should be used on all shoring that rests on the ground. Shoring should be properly braced.

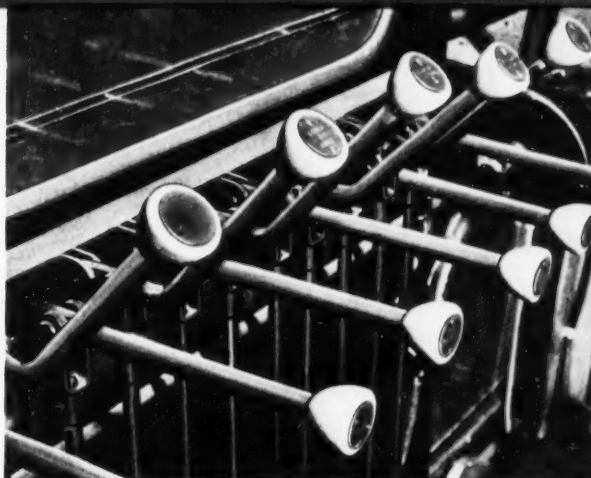
Before decking is in place on joists, temporary scaffolding should
(Continued on page 20)

SUNDSTRAND

MULTIPLE SECTION SERIES VALVE
provides fingertip control of Bros Sno-Meltr



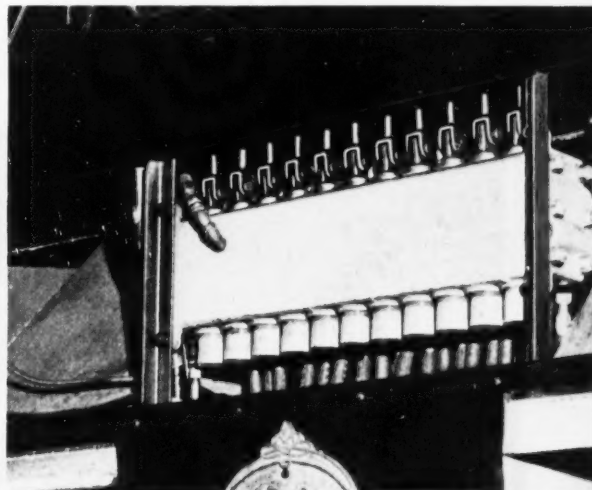
CLEARs TRACK IN A HURRY!—either by casting the snow to one side, or melting snow inside "Bros Sno-Meltr." Plow, rake, casting chutes, gathering wings, and scarifier under simple, easy, convenient "fingertip" hydraulic control provided by Sundstrand Multiple Section Series Valve.



HYDRAULIC CONTROLS—grouped in front of operator inside insulated cab. Ease of control makes possible 'round-the-clock' operation in emergencies without undue fatigue. No "kick-backs" on operator's wrists as chunks of ice are hit!



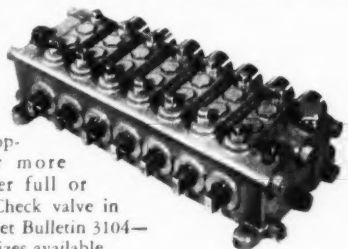
19,000 GALLONS IN 10 MINUTES!—cutting 14' swath, snow is gathered into hydraulically actuated casting chutes, delivered to melting chamber, melted by hot water pressure "spraying on" process, then dumped through 16" diameter gate. Handles snow on open tracks, or inside stations.



COMPACT, ACCESSIBLE—Sundstrand Multiple Section Series Valve is compactly mounted below levers in front of cab. Easily accessible. Lessened wear of hydraulic controls assures longer life, instantaneous response, and smooth, positive operation.

Up to 10
controls in
one assembly

Permits you to operate two or more cylinders under full or varying load. Check valve in each section. Get Bulletin 3104—ask about two sizes available.



SUNDSTRAND HYDRAULICS

SUNDSTRAND MACHINE TOOL CO.

HYDRAULIC DIVISION, ROCKFORD, ILL.

AIRCRAFT AND INDUSTRIAL HYDRAULIC TRANSMISSIONS, PUMPS, MOTORS AND VALVES • OIL BURNER PUMPS • AIR SANDERS
LATHES • MILLING, BROACHING AND SPECIAL MACHINES • BROACHING TOOLS • MAGNETIC CHUCKS

Why the **TEXACO** **PLAN** is



What Contractors Say — (Names on request)

Montana: "The time and confusion saved by the Texaco Simplified Lubrication Plan are incalculable."

Illinois: "The saving of time and elimination of guesswork . . . were import-

ant factors in completing the contract on schedule."

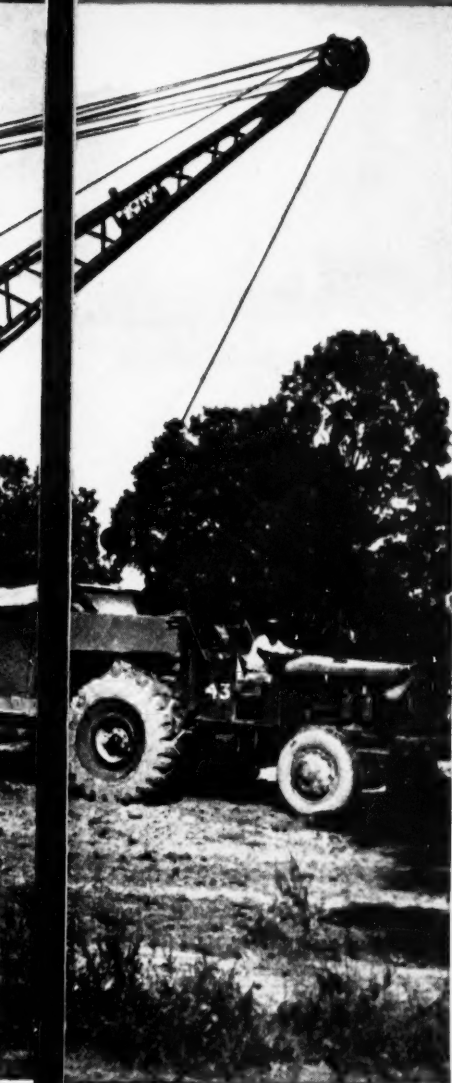
North Carolina: "Texaco keeps all our equipment on the job, saves us money."



TEXACO

SIMPLIFIED LUBRICATION

always "Tailor-Made"



Just as *no one* lubricant can protect *all* your equipment, so there is *no one* simplified lubrication plan that is equally good at all times and on all jobs. And that is why the Texaco Simplified Lubrication Plan is always tailor-made for the individual requirements of the project in hand. It is designed especially for large operations where a wide variety of equipment is used.

A Texaco Lubrication Engineer surveys your equipment, studies the work to be done, and then recommends the fewest possible lubricants — *usually no more than six!* — that will give *all* your major equipment complete protection. The following is an example:

Chassis and other plain bearings: Use *Texaco Marfak* — it won't pound or squeeze out.

Wheel and other anti-friction bearings: Use *Texaco Marfak Heavy Duty*. No seasonal change required.

Engines, heavy duty gasoline and Diesel: Use the heavy duty member of the *Texaco Ursa Oil* series recommended for your particular engines and operating conditions.

Track rollers (sleeve-type): Use *Texaco Track Roll Lubricant*. It protects against dirt and moisture.

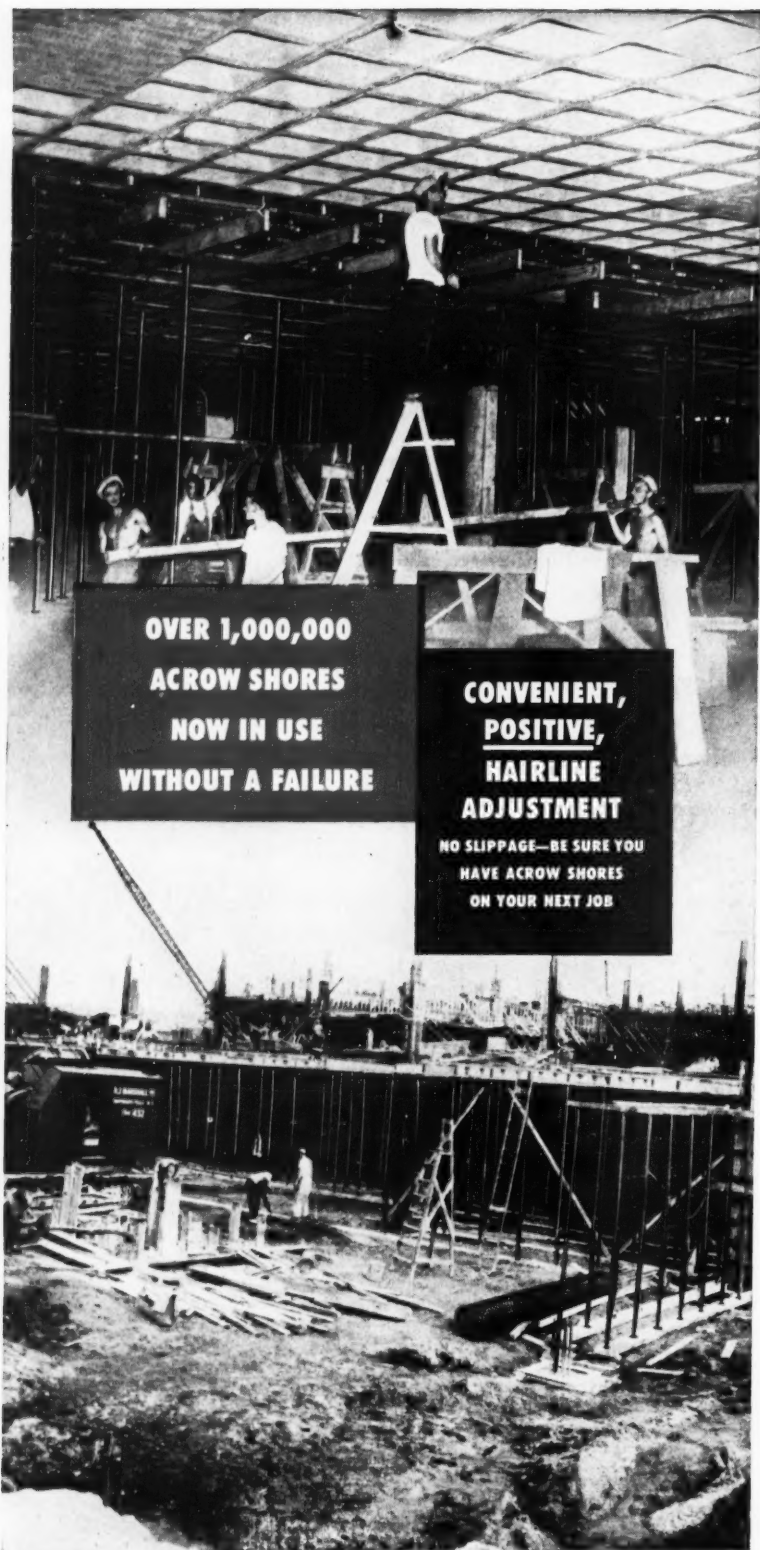
Rock drills, and other air tools: Use *Texaco Rock Drill Lubricant EP*. It protects against wear and rust.

Air compressors: Use the Texaco air compressor oil recommended for the particular operating conditions.

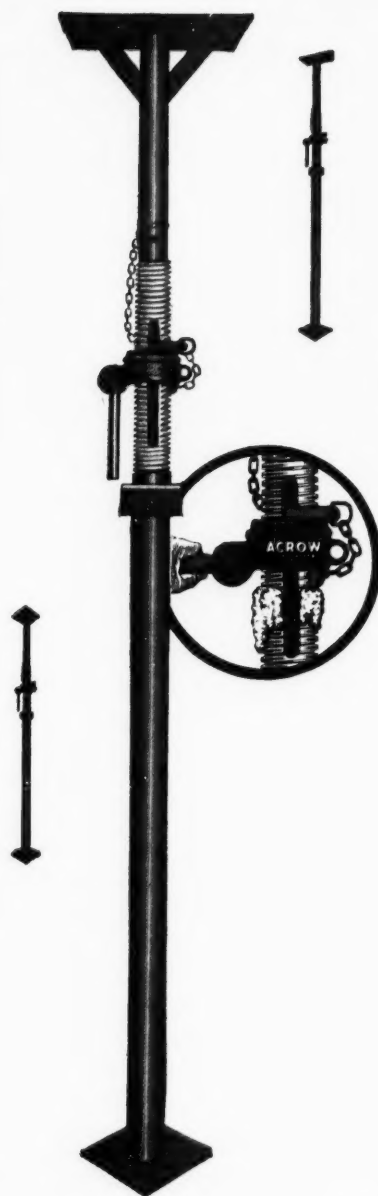
Let a Texaco Lubrication Engineer help you set up the Texaco Simplified Lubrication Plan especially designed for you. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT



8,000



*Photo shows Size 4 Acrow Shores
being used 4' on center,
extended to 14'6" under slab
and steel pans.*

ACROW SHORES used on "Pan" job

ACROWS SAVE TIME AND MATERIALS IN GRID FLAT SLAB SYSTEM OF CONSTRUCTION

Sordoni Construction Company of Wilkes-Barre, Pa., used over 8,000 Acrow Shores for erecting additions to the IBM Plant at Poughkeepsie, New York. No horizontal bracing was required because of the

high loading capacity of Acrows. Acrows are quickly adaptable and highly recommended for any reinforced concrete slab system. For safe, sure support, specify Acrow adjustable Steel Shores.

ACROW

ADJUSTABLE STEEL SHORES

Acrows are safer, stronger, easier to handle. They are always ready for instant use. One man can erect an Acrow Shore in less than a minute, and strip it just as quickly. All-steel construction eliminates costly maintenance. Working loads are fully established

and guaranteed. SELF-CLEANING patented stud on collar automatically clears the thread of concrete and dirt when adjustment handle is turned, assuring quick, easy stripping, and keeping the Acrow Shore ready for your next job.

GENERAL SPECIFICATIONS

Shore Sizes, Dimensions, Weights, and Capacities

Size No.	HEIGHT		Weight in Lbs.	FAILING LOAD		RECOMMENDED SAFE WORKING LOAD	
	Fully Closed	Fully Extended		Fully Closed	Fully Extended	Fully Closed	Fully Extended
1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2½ in.	12 ft. 5½ in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5800 lbs.	2050 lbs.

ACROW . . . *World's Largest Selling Shore*

ACROW, INC., 510 North Dearborn, Chicago 10, Illinois

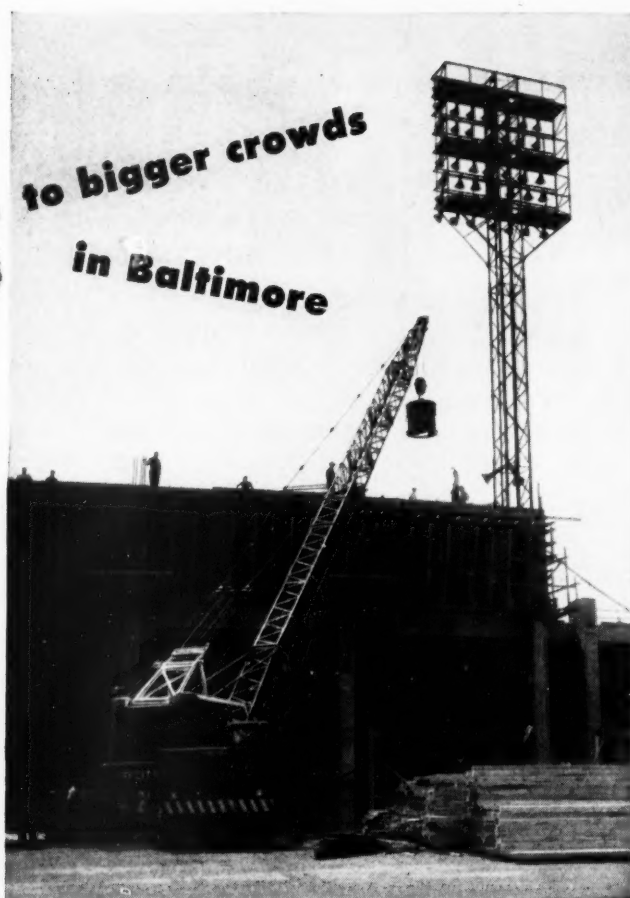
Dept. CM-10

UNITED STATES OFFICES

Chicago, Michigan 2-1010	Houston, Underwood 8514
New York, LExington 2-7395	Dallas, Riverside 6051
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ASSOCIATE COMPANIES

Acrow (Canada) Ltd., Montreal	Acrow Argentina S.A., Buenos Aires
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Acrow Brazil S.A., Rio de Janeiro	Acrow (Engrs.) Ltd., London
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All lifts are easier with a **CRANEMOBILE**

Handy pocket-sized book of facts and features tells you why "all lifts are easier with a Crane-Mobile." It's packed with interesting information, it's nicely illustrated, and it's yours for the asking. Just write us.



More baseball and football fans than ever before will show up to root for the home teams in Baltimore. That's because the Memorial Stadium, home grounds of the Baltimore Orioles baseball team and the Baltimore Colts football team, is being enlarged to provide a permanent seating capacity for more than 58,000 people. Joseph F. Hughes & Co., using BAY CITY CraneMobile, is handling the construction on this job. Operating with an 85-ft. boom, the long reach and high lift of CraneMobile enables them to place concrete and other materials for the upper deck construction with speed and precision. Whether you're excavating or erecting, CraneMobile will give you the same efficient performance and dependability. It will pay you to get all the facts about CraneMobile from your BAY CITY dealer.



BAY CITY



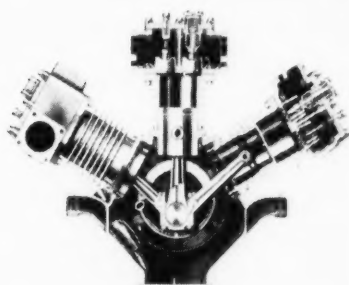
SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

How long since you checked your compressor's fuel consumption?

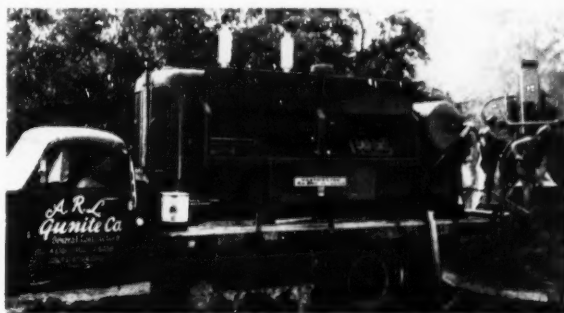
These figures will show you how Worthington Blue Brutes may save you as much as
1500 gallons of fuel during an average operating year

COMPRESSOR SIZE	ENGINE TYPE	GALLONS OF FUEL PER HOUR AT 80 PSI	GALLONS OF FUEL PER HOUR AT 100 PSI
60'	GASOLINE	1.31	1.42
105'	GASOLINE	2.16	2.35
	DIESEL	1.66	1.73
160'	GASOLINE	3.18	3.44
	DIESEL	2.45	2.60
210'	GASOLINE	4.32	4.70
	DIESEL	2.89	3.06
315'	GASOLINE	6.25	6.75
	DIESEL	4.38	4.64
600'	DIESEL	6.30	9.20

HOW DOES YOUR COMPRESSOR STACK UP in comparison with the Blue Brute for fuel economy? The figures shown have been determined under normal field operating conditions.



"SURE ARE EASY TO SERVICE." That's what we hear about Blue Brutes from mechanics all over the country. No special tools or complicated disassembly procedures are needed. And compressor uses same oil as engine.



PLENTY OF RESERVE HORSEPOWER is standard with the Blue Brutes. It takes thousands of hours of normal operation before engine wear affects the compressor's output. This means you get full-rated output even though the engine hasn't been in the shop for a long time.

Get the rest of the Blue Brute story from your nearest Worthington distributor. Or write to Worthington Corporation, Construction Equipment Division, Section H 3 5, Plainfield, N. J.

WORTHINGTON

IF IT'S A CONSTRUCTION JOB, IT'S A **BLUE BRUTE** JOB



ROCK DRILLS

WAGON DRILLS

PAVERS

CONCRETE MIXERS

PORTABLE PUMPS

NOW YOU CAN Save those Damaged \$2000—\$3000 Tires!

● NEW PATENTED PROCESS MAKES REPAIRS Stronger Than New Tires

The Forbush "Vulco-Bolted" process repairs major cuts in your giant earthmoving tires... saves you the cost of new tires! "Vulco-Bolted" repairs *hold fast* because they are bolted and vulcanized to the tire, assuring new-tire strength where it is most needed. Bolts are covered with live rubber; repairs may be retreaded without danger of weakening the repaired part. "Vulco-Bolted" repair sections are guaranteed for the life of the tire.



Let us Prove We Can Save Your Damaged Tires... At Our Expense!

Pick out your most seriously damaged giant earthmoving tire and send it to us prepaid freight, "junk tire" classification. We will repair the tire and ship it back to you prepaid. If the tire does not live up to all of our claims, *we will not charge you a cent*. If, on the other hand, the repair is all we claim, you pay a nominal repair charge. Send us your damaged tires today!

Write or Wire for Further Details

The Forbush Company

110 Grand Avenue • Pueblo, Colorado

JOB TALK ... Continued from page 12

be erected as necessary to enable men to work safely.

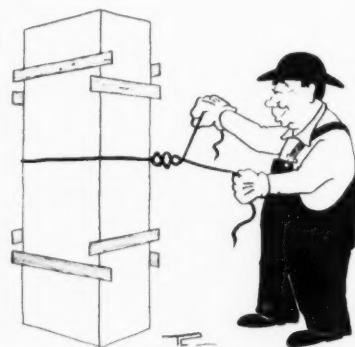
Form lumber should be cleaned and all nails removed before being re-used. The nails should not be bent over or driven in.

(2) Forms should not be removed prematurely. *Be sure concrete is properly set—not frozen.*

Only men actually engaged in this work should be allowed where stripping is being done.

Before stripping forms, centering should be well supported by shoring. Ledgers should be fastened to shores to prevent the centering from falling.

In cutting tie wires under tension, care should be taken to pre-



vent a back lash which might hit the body, particularly the face, eyes, or throat.

Stripped lumber should be removed at once to separate pile, cleaned, and all nails removed.

Grizzlies on Scrapers Classify Pit Gravel

SCREENING UNCLASSIFIED MATERIAL used on a roadbuilding job is done "on the run" by the McKinnon-Decker Co., Helena, Mont., contractor. Some 21,000 yd of subgrade gravel had to be excavated from a pit and spread on the road.

Excavation in the pit is by shovel and, to eliminate frequent moving of a stationary grizzly, McKinnon-Decker built a grizzly over the top of each scraper bowl used to haul from the shovel and spread on the road. Scrapers are three Caterpillar No. 10's, and each grizzly is fabricated from used mine rails, 2 1/2 x 2 1/2-in. angles and sheet-steel sideboards. Rails are spaced to refuse over-sizes and clean without jamming.

contractors say:
**"ADAMS
 Creeper Gears*
 best thing ever
 put into a
 motor grader"**

• This comment from R. E. & C. H. Ostler, contractors of Monrovia, Calif., is typical of that coming from contractors and highway officials everywhere. The Ostlers like Adams creeper gears because "they provide the extra-slow speeds so necessary for careful banksloping, fine finishing and working in tight spots."

Adams creeper gears permit working as slowly as $\frac{1}{4}$ mph. This gives you unequalled power and control for a wide range of difficult operations . . . grading in an area of seen or unseen obstructions—working a mountain road—shaving an asphalt street or a black-top road, etc.



Ostler-owned 100 hp. Adams Motor Grader working on development project in Garden Grove, California.

* Optional in new Adams Constant-Mesh Transmission, providing three extra-low speeds—as low as $\frac{1}{4}$ mph. . . . This new transmission has 8 standard forward speeds up to 25 mph., and 4 reverse speeds up to 13.7 mph.

Optional at nominal cost, creeper gears can be installed in any Adams Grader equipped with Adams Constant-Mesh Transmission—no special case or alterations involved.

Creeper gears are one of many features that make Adams the world's finest performing motor graders. Ask your local dealer for an on-the-job demonstration . . . **J. D. Adams Manufacturing Co., Indianapolis, Ind.**

*Make your next
 motor grader an*



UNIVERSAL Spirolocs

HEAVY DUTY TIES
FASTEST—SAFEST—LOWEST COST



UNIVERSAL Spirolocs—*heavy duty Form ties...Permanent, reuseable equipment...fast acting Acme threads...washers and stud rods last indefinitely; only inexpensive threaded tie rods expended.*

Spirolocs provide fast erection...easy stripping...available in various time-saving combinations to fit the exact needs of your job.

RENTED...SOLD

Greater Tie Strength
For less money with Spirolocs

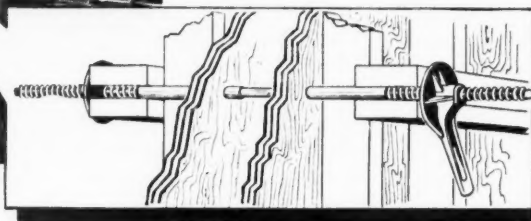
5,000# Ties with $\frac{3}{8}$ "-Tie Rods
9,000# Ties with $\frac{1}{2}$ "-Tie Rods
14,000# Ties with $\frac{5}{8}$ "-Tie Rods
20,000# Ties with $\frac{3}{4}$ "-Tie Rods

SPIROLOC CONE NUT ASSEMBLY



The only fast acting form Tie with an absolutely positive spreader...assures smooth surfaced, watertight walls.

Write for complete details on SPIROLOCS and ask for catalog describing Universal Form Tying Accessories.



Spirolocs are Furnished with either Handle or Nut Type Washers

THE HANDLE WASHER
SLIP IT ON



THE NUT WASHER
SPIN IT ON

UNIVERSAL FORM CLAMP CO.

GENERAL OFFICES AND FACTORY: 1238 N. KOSTNER • CHICAGO 51, ILLINOIS

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DISTRIBUTORS IN PRINCIPAL CITIES

Service
Wherever

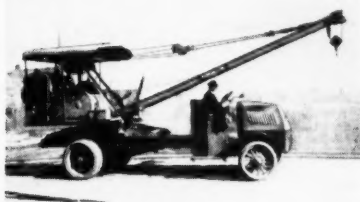
You Build...Coast to Coast



Copyright 1953 by UNIVERSAL FORM CLAMP CO., Chicago 51, Ill.

How "Cranes - on - Rubber" Got Their Start

Back in 1918, General Pershing asked for 125 mobile cranes on truck chassis to work on the docks in France to speed up the handling of war material. But, World War I ended before such cranes were available. However, F. A. Smythe, then President of The Thew Shovel Co. in Lorain, Ohio, developed the idea and, late in 1918, the Universal Crane Co., a subsidiary of Thew, marketed the first so-called "Truck Crane".



The first truck crane — 1918 model

In the years that followed, much happened to "truck cranes". They became accepted tools of the construction industry, capacities increased, booms became longer, and finally exceeded the capabilities of the commercial truck chassis as mountings. These were replaced with a heavy-duty carrier especially designed for the live, highly-concentrated loads of shovel-crane use. The first such carrier, on which was mounted a Lorain turntable, was the Lorain Moto-Crane, developed and produced by Thew in 1940. Thew Shovel Co. still designs and builds Moto-Cranes in their own plants.

The first Universal Truck Crane had a lifting capacity of 3 tons with a maximum boom of 20 ft. Today, Moto-Cranes are made in a variety of capacities from 6 to 45 tons, with highway speeds up to 33 m.p.h. Rear axles mounted on rocker beams, air steer, large dual wheels, ample tractive effort and the availability of front end drive make them exceptionally efficient for off-the-road travel over soft and rough ground.



World's largest crane on rubber today

While the trade-marked name for the Lorain 2-engine rubber-tire machine is "Moto-Crane", it has been many years since their use has been limited to lifting crane service only. Front ends are also available for shovel, dragline, clamshell, hoe and scoop shovel use as well.

(Advertisement)

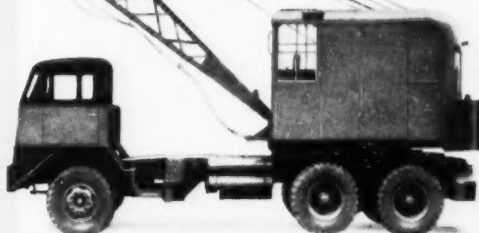
2 NEW

MOTO-CRANE. MODELS BY LORAIN

22½ TONS

LORAIN MODEL MC-424

2 gasoline engines (1 on turntable, 1 on carrier); available as shovel, crane, dragline, clamshell and hoe; 96" over-all width; 10 forward speeds (up to 27 m.p.h.), 2 reverse speeds; air brakes; maximum boom with tip - 125 ft. May be had with diesel power for turntable, third drum, power load lowering, front wheel brakes and many other accessories.

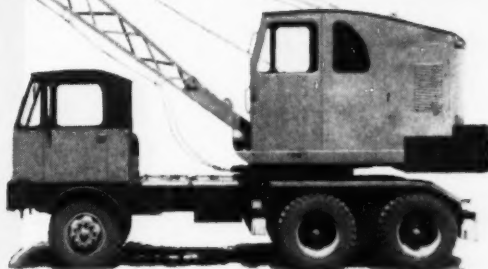


Also available as a companion single-engine Self-Propelled machine — Model SP-424.

17½ TONS

LORAIN-TL MODEL MC-254W

Available as ¾-yd. shovel, crane, dragline, clamshell, hoe or 1¼ cu. yd. scoop shovel. 106" over-all width; 8 forward speeds (up to 37 m.p.h.), 2 reverse speeds; air brakes; maximum boom length with tip is 95 ft. May be had with diesel power for turntable and carrier, with front driving axle, third drum and many other accessories.



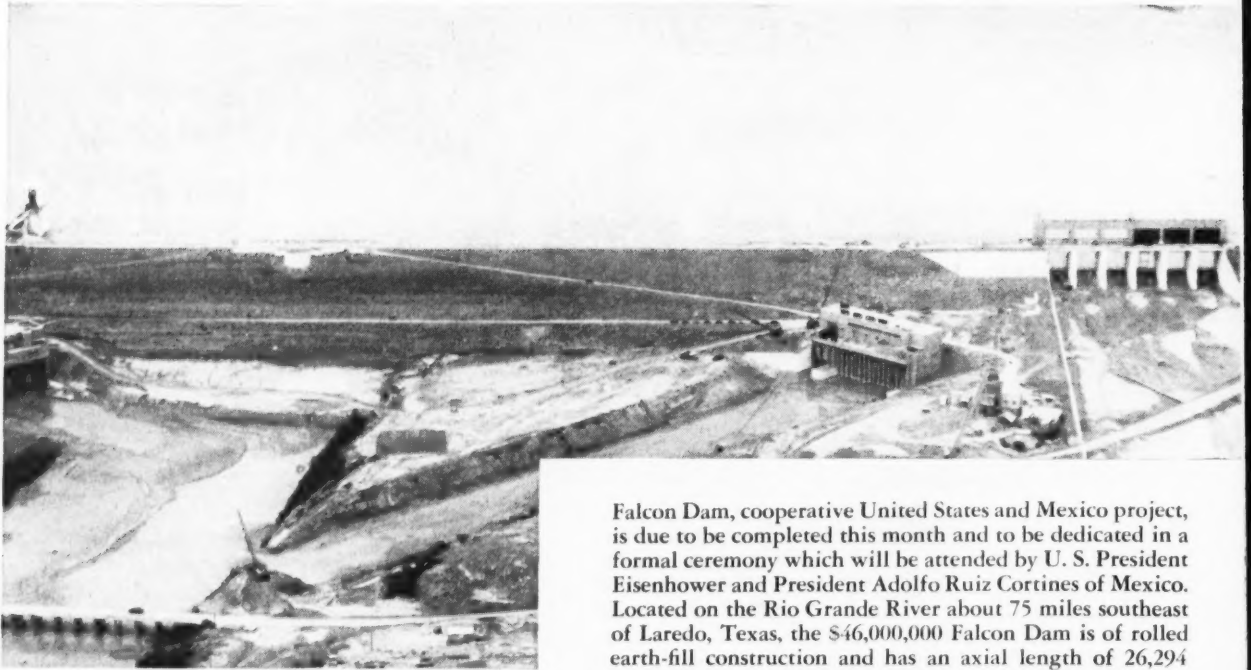
Also available as a companion single-engine Self-Propelled machine — Model SP-254W.

Now you can have even greater selection from the Lorain line of products with the addition of these 4 new Moto-Crane and Self-Propelled models. Thew-Lorain is now better prepared than ever to serve all your shovel-crane needs — whether on rubber tires or crawlers. See your Lorain distributor for the full Lorain story.

THE W LORAIN.

THE THEW SHOVEL CO.,
LORAIN, OHIO

GULF PRODUCTS *and* FINE SERVICE



Falcon Dam, cooperative United States and Mexico project, is due to be completed this month and to be dedicated in a formal ceremony which will be attended by U. S. President Eisenhower and President Adolfo Ruiz Cortines of Mexico. Located on the Rio Grande River about 75 miles southeast of Laredo, Texas, the \$46,000,000 Falcon Dam is of rolled earth-fill construction and has an axial length of 26,294 feet. The crest of the dam is 35 feet wide, and maximum height above the present river bottom is 150 feet. The major construction item was 29,415,00 cubic yards of earth work. Both the upstream and the downstream sides of the dam are shown in the photographs reproduced here.



keep equipment rolling on huge Falcon Dam Project

AMIS CONSTRUCTION CO.
OKLAHOMA CITY, OKLAHOMA

MASSMAN CONSTRUCTION CO.
KANSAS CITY, MISSOURI

FOLEY BROTHERS, INC.
ST. PAUL, MINNESOTA

C. F. LYTLE COMPANY
SIOUX CITY, IOWA

EDWARD PETERSON COMPANY
OMAHA, NEBRASKA

SAN ORE CONSTRUCTION CO.
MC PHERSON, KANSAS
TELLEPSSEN CONSTRUCTION CO.
HOUSTON, TEXAS

FALCON DAM CONSTRUCTORS



P. O. BOX NO. 2
FALCON HEIGHTS, TEXAS

June 24, 1953

Gulf Oil Corporation
Houston Sales Division
Gulf Building
Houston, Texas

Gentlemen:

The Falcon Dam and Power Plants constructed jointly by the International Boundary and Water Commission and the Ministry of Hydraulics in Mexico is now nearing the final stages of completion.

We, as prime contractors operating under the name of Falcon Dam Constructors on the United States Section, and Constructora Intercontinental, S.A. on the Mexican Section have used Gulf products exclusively throughout the entire construction of this International Dam. We have experienced superior results in the operation and maintenance of our various equipment through the use of Gulf products on explicit recommendation of your engineering staff.

We wish to commend your organization including the engineering and sales staff in affording us uninterrupted service and supply throughout our entire operation. In the event we might be awarded additional work in this area, we would endeavor to resume our present mutual business relations in the use of Gulf fuels and lubricants.

Yours very truly,

FALCON DAM CONSTRUCTORS

A. M. Croxson

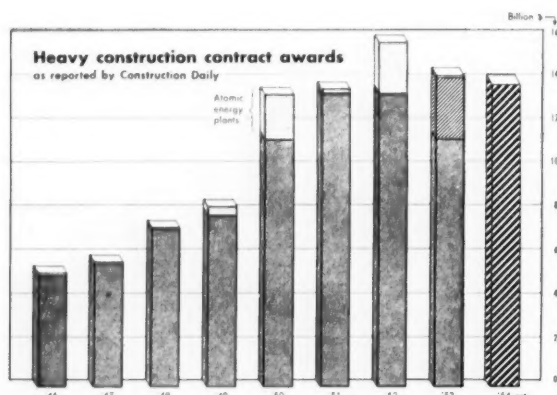
A. M. Croxson
Project Manager



GULF OIL CORPORATION
GULF REFINING COMPANY
Gulf Building
Pittsburgh 30, Pa.

Let us discuss with you how Gulf Quality Products and Fine Service can help you on your next job. They are available to you through more than 1400 warehouses. Write, wire or phone your nearest Gulf Office.

It's Your Business . . .



Local Public Works Take Spotlight In 1954 Construction Picture

THE HEAVY CONSTRUCTION for you to bid on next year should be only slightly, possibly 2½%, below this year's volume measured in dollars.

But these dollars are a little more solid than in recent years, since the cost rise has slowed down, and bid prices are actually below their peaks in late 1952.

The bargain rates at which you have been signing up heavy construction contracts this year are partly responsible for a lower dollar volume of work than originally estimated. Heavy construction contract total through September is 7% behind last year instead of the 4% estimated at the beginning of the year. The cutback in federal construction accounts for most of this difference. It is down 71% instead of the estimated 41%. But state and municipal awards are up

20% instead of the estimated 17%, and private construction is up 26% instead of the anticipated 5%.

Next year watch state and municipal contract volume. It should run 4% above this year. Federal contracts probably will drop 6% below, and private contracts 6% below to average out at the 2½% decline in dollar volume noted above.

This means that you should have \$13.98 billion in heavy construction to divide up next year, \$5.1 billion in state and municipal works, \$1.18 billion in federal jobs and \$7.7 billion in private construction.

This forecast counts on increased volume in these classes of work: sewerage up 8% to \$450 million; bridges up 2% to \$650 million; streets and roads up 10% to \$1,850 million; public buildings up 5% to \$1,700 million; public unclassified up 1% to \$800 million; commercial buildings up 6% to \$1.3 billion.

And it allows on the downside for these setbacks: waterworks down 6% to \$230 million; earthwork, irrigation, waterways down 21% to \$300 million; public housing down 21% to \$300 million; private mass housing down 11% to \$3.0 billion; industrial building down 5% to \$2.5 billion; private unclassified down 7% to \$850 million.

The backlog of proposed construction continues to rise. Money is plentiful but more expensive. The rise in bond yields has halted, and bond issues to finance construction are moving smoothly into the market in record volume. Some construction has been delayed while borrowers resist higher rates and lenders resist the old rates. But the money is there and so is the proposed construction.

This is your construction outlook as the last quarter of 1953 gets under way. It is, of course, a preliminary appraisal of the immediate future and, like all forecasts, bears close watching and checking against actual performance as it unfolds.

Used Equipment Prices Set at Auction

INDICATIONS of what used heavy construction equipment is worth today on the Atlantic Seaboard were revealed at a big auction sale held by Alban Tractor Co., Inc., Baltimore, Md., on Sept. 21. Alban, Caterpillar Tractor Co. distributor, sold 90 pieces, all their own, taken in on recent trades, for some \$278,000. Many items had been overhauled in the Alban shop, and cost of such repairs was listed in the catalog descriptions. In general, small items sold at good prices; big equipment went cheap in most cases.

The sale included only earth-moving equipment: 56 tractors, some with front-end loaders, some with bulldozers, others bare; six Euclid (43 FDT) bottom dumps;

four Caterpillar DW10s; eight graders; one truck crane; one ½-yd crawler shovel; and a few odd engines. It was conducted in a splendid, straightforward manner by Forke Bros., of Lincoln, Neb., with Avery Forke as auctioneer and his brothers assisting. Terms were cash, or 25% down and balance within 30 days before purchased items could be removed. No Alban representative was allowed to bid, everything was sold regardless of price.

Practically all items had been repainted for the sale. They were lined up either in a big circle, or in a straight line, with catalog numbers painted on each unit. Everything had been available for inspection two days before the

sale. All engines were running 2 hr before bidding started, and any machine would be demonstrated upon request. During bidding, the engine would be started, and the machine even demonstrated, if desired. Catalog descriptions were complete with serial numbers, list of attachments, and date and cost of overhaul. A few catalog errors were corrected by the auctioneer as the particular machine involved was reached. About 500 persons were in attendance, though not all at the same time, as bidding proceeded according to catalog listing.

Here are some ranges in prices. Caterpillar D2 tractors: bare, \$800 to \$1,800; with PCU, \$2,050; with

(Continued on page 29)

WANT TO TAKE A DARE?



Here's a challenge to any owner of any competitive machine.

Your Caterpillar Dealer will demonstrate any Caterpillar-built machine against any competitive unit . . . and he'll do it on your job.

He'll do it—not with a chip on his shoulder—but to show you that a Caterpillar-built machine will do your job better, with more production in less time and for a longer period without down time that costs you money in time and repairs.

If you own Cat* equipment you know it will do these things. If you're using another make, here's your chance to find out whether or not you're getting your money's worth.

If you've never used Caterpillar equipment on your job our dare gives you a chance to compare the working ability of Cat machines with others.

Take the dare . . . get a demonstration . . . any way you look at it, you'll be the winner.

Call your Caterpillar Dealer and say, "Yes, I'll take your dare." Tell him where and when. He'll do the rest.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks. (9)

**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

**Why operate big,
oversize compressors**

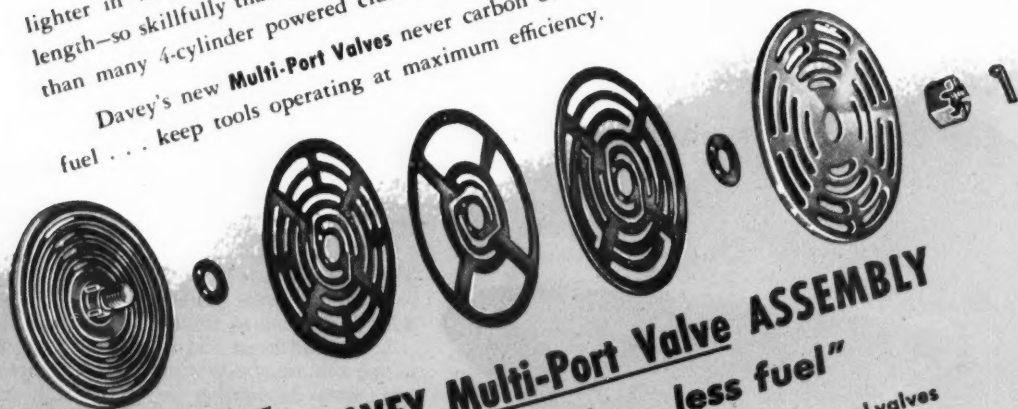
?

**The DAVEY Model 105 is the smallest, lightest 105
c.f.m. 2-stage compressor available today!**

There's no sense to hauling around a cumbersome, heavy old style 105 ft. compressor. You can use a new, lightweight Davey and get more air per lb. of fuel along with greater service dependability and longer life.

Because Daveys use weight-saving "Cool Oil" aluminum alloy crankcases, they are lighter in weight. And, they are engineered to make maximum use of every inch of length—so skillfully that they give you a 6-cylinder engine with hand clutch in less space than many 4-cylinder powered clutchless units.

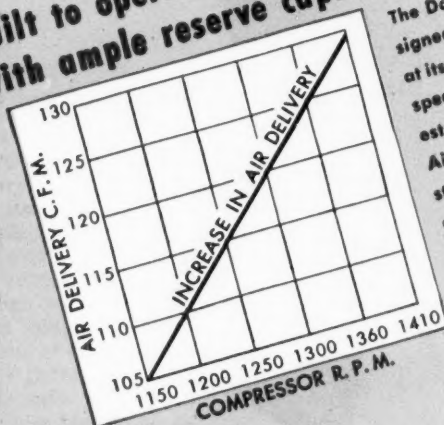
Davey's new **Multi-Port Valves** never carbon or foul . . . deliver more air per lb. of fuel . . . keep tools operating at maximum efficiency.



DAVEY Multi-Port Valve ASSEMBLY
"more air . . . less fuel"

Tests indicate that Davey's ultra low lift, Swedish steel valves make possible consistent fuel savings up to 21 percent.

**Built to operate efficiently and economically
with ample reserve capacity**



The Davey Model 105 is designed to produce 105 c.f.m. at its most efficient operating speed in accordance with established Compressed Air and Gas Institute standards. However, the compressor possesses tremendous reserve capacity as shown by graph at left.



Davey Model 105s have been America's lightest weight, most compact 105 ft. portables since 1944.

DAVEY

*pioneers of
air-cooled air*

Ask your Davey Distributor for data on standard 60 to 600 c.f.m. Davey portable and industrial compressors; Auto-Air (truck-mounted compressors); Mobile Machine Shops and Field Service Units.

DAVEY COMPRESSOR CO. • KENT, OHIO

IT'S YOUR BUSINESS ...

Continued from page 26

front-end loaders \$2,050; with bulldozers, \$1,400 to \$3,700. Cat D4s: bare, \$500; loaders, \$3,000 to \$6,000; bulldozers, \$1,200 to \$4,500. Cat D6 with loader, \$2,650. Cat D7 with loader, \$3,000. Cat D8s: bare, \$1,900 and \$2,000; with PCU, \$2,100.

Allis-Chalmers HD5: loaders, \$2,600 to \$4,400; bulldozers, \$1,800 to \$2,650. HD7, bulldozer, \$1,950; HD10, bulldozer, \$2,600; HD14, bulldozer, \$2,750; HD19s: bare, GM engine, \$4,700; bare, Cummins engines (cost original owner \$6,000 each for change-over) \$3,100 to \$4,950; same with bulldozer, \$6,600 (highest tractor price).

International Harvester TD14s: bare, \$1,100; bulldozer, \$3,500. TD18s: bulldozers, \$2,300 to \$4,100. TD24s: bare, \$1,350 to \$3,350; with PCU, \$4,200; bulldozers, \$5,300 and \$5,700.

Cat DW10s, identical units, two at \$10,300; two at \$7,100. Euclid 43FDT bottom dumps, five at \$6,600; one at \$5,000.

Motor graders: Cat 10, \$900. Cat 12, \$3,100 and \$3,800. Cat 212, \$1,325 and \$3,000. Warco 33, \$300. Adams 414, \$1,250. Austin-Western 99M, \$1,450.

Link-Belt ½-yd LS51 crawler, with crane, back-hoe and new shovel front, new Waukesha engine, \$7,800. Lorain truck crane on old Mack chassis, \$2,350. A Le-Tourneau F scraper, 14-yd, brought \$2,950, while a larger FP, 17½-yd, in comparable condition, went for only \$2,650.

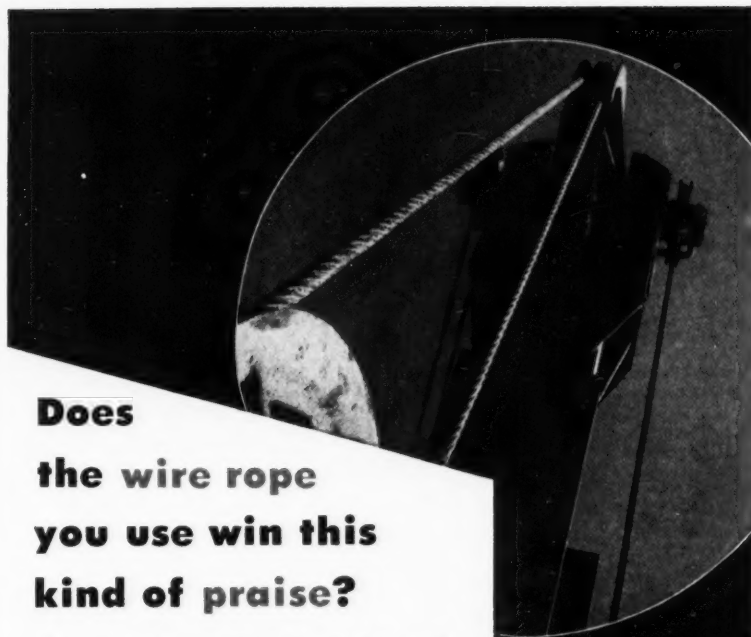
Those are the going prices for used equipment today in the Baltimore area.

SOME BIG CONTRACT AWARDS OF THE MONTH

J. A. Utley Co., 723 E. Ten Mile Rd., Ferndale, Mich. Office to house Blue Cross and Blue Shield personnel, 441 E. Jefferson St., Detroit, for Michigan Medical Service, 234 State St., Detroit. \$2,000,000.

J. Rich Steers, Inc., 17 Battery Place, New York 4. Alt B, prestressed concrete pier C at Hoboken Port Authority Piers, Hoboken, N. J. for the Port of New York Authority, 111 8th Ave., New York 11. \$4,393,200.

Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Calif. Grading, tunnel structures 4.5 mi Waldo Approach between Manzanita and Golden Gate Bridge, Marion (More Big Jobs on page 31)



Does the wire rope you use win this kind of praise?

"I have preferred Hercules Red-Strand wire rope since 1909," says an operations superintendent. "I just wouldn't use any other." Another operator reports a truly remarkable record: "Red-Strand outlasted any other rope by three times!"

HERCULES Red-Strand earns it

Why do these men, among others, praise Red-Strand so highly? In a few words, it's because *higher-than-rated quality* in Red-Strand wire rope means *longer-than-expected service*... year in, year out.

Next time, use Hercules Red-Strand. You'll experience the difference too.

Be sure to get your free copy of valuable 64-page LESCHEN Wire Rope Handbook. Ask your nearby HERCULES® Red-Strand distributor... or write direct.

Distributors in all principal cities

LESCHEN
WIRE ROPE
AND SLINGS

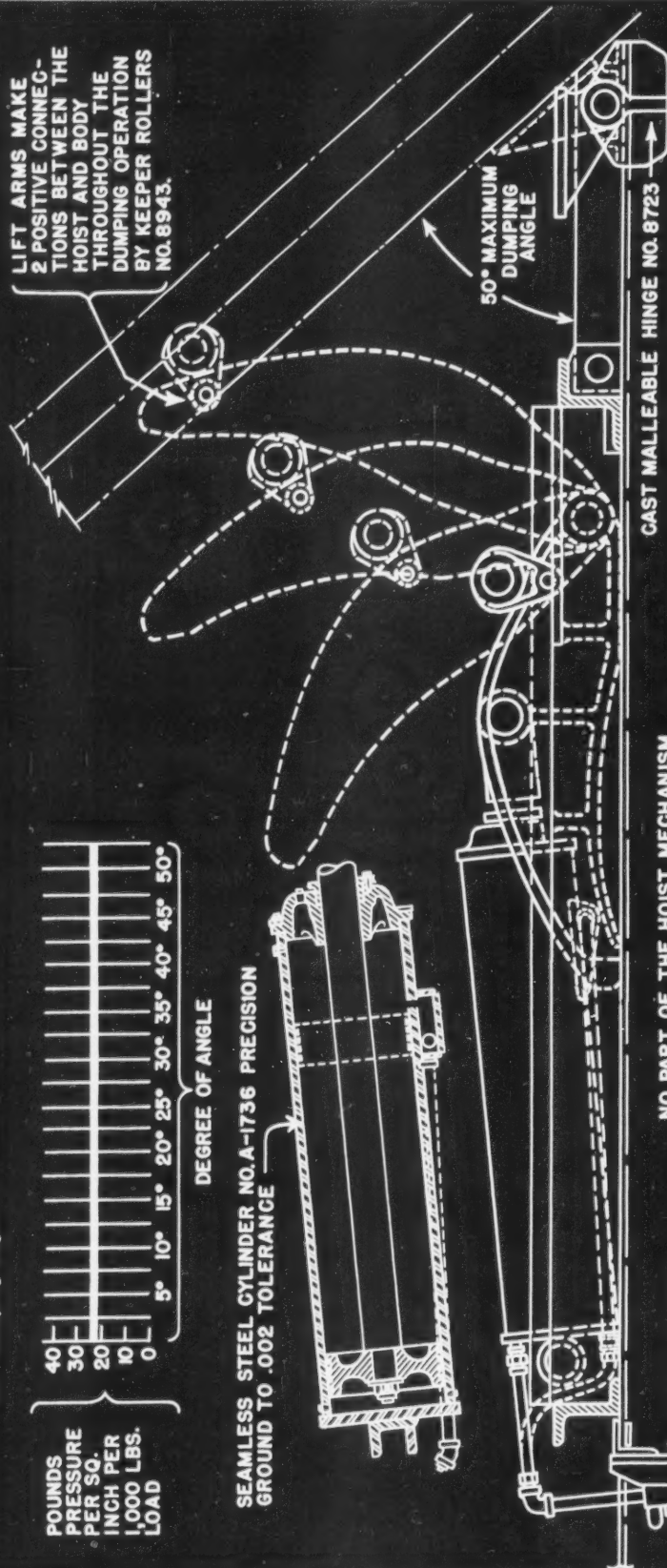
LESCHEN WIRE ROPE DIVISION • ST. LOUIS 12, MISSOURI
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)

ISO-DRAULIC ROLL-A-LIFT

OIL PRESSURE DEMAND FOR THIS INSTALLATION IS 21.7 LBS. PER SQ. INCH FOR EACH 1,000 LBS. OF LOAD. IE: Payload plus weight of specified body. This pressure demand remains constant from 0° to 50° dumping angle.



SEAMLESS STEEL CYLINDER NO. A-1736 PRECISION GROUND TO .002 TOLERANCE



HEAVY DUTY HOIST ASSEMBLY

MODEL NO. 827

DATE 1-1-46

SCALE 1"=1'-0"

DRN *W.A. Wagner* A-144-A

THE PERFECTION STEEL BODY CO.

GALION, OHIO

THIS BLUE PRINT

taken from the files of The Perfection Steel Body Company tells an important story.

The goal of all hydraulic engineering is even pressure throughout working cycles. This goal is achieved in Perfection's line of ISO (even pressure)—DRAULIC Roll-A-Lift heavy duty hoists for dump bodies from 9 ft. to 18 ft. in length.

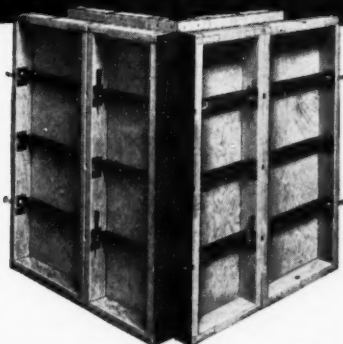
The pressure chart indicates a practically flat curve throughout the dumping cycle. This means the system exerts the least possible effort while lifting and, therefore, maintains greater loads. No severe shocks are transferred to the hoist or truck frame, giving longer trouble free service. If you would like to know what this engineering achievement means to you as a truck operator, please write us for information.

THE PERFECTION STEEL BODY COMPANY

DEPT. No. M-103

Galion, Ohio

SYMONS



FORMS

for

- STRAIGHT WALLS
- BATTERED WALLS
- CURVED WALLS
- SLABS

Ask for Estimate



SYMONS CLAMP & MFG. CO. Dept. J-3
4255 DIVERSEY AVE. • CHICAGO 39, ILL.

BIG JOBS OF THE MONTH

Continued from page 29

County, for California State Division of Highways, Public Works Bldg., Sacramento, Calif. \$4,122,382.

Centex Construction Co., McAree & Sunset Rds., Waukegan, Ill., 1350 homes northwest of Waukegan, \$13,000,000.

Contracting & Material Co., 1235 Dodge St., Evanston, Ill. Laying gas pipe line from concentration point near Joliet to Chicago for Chicago District Pipeline Co., 20 N. Wacker Dr., Chicago, Ill. \$1,500,000.

Vitro Corp. of America, 283 Broadway, New York City. Construction management contract for titanium plant consisting of between 20 and 24 industrial type units on Simmons & Myers tracts, approximately 200 acres between N. Hawthorne St., South Chickamauga Creek and spur line of Southern Railway, Chattanooga, Tenn., for Cramet, Inc. (subsidiary of Crane, Inc.) 836 S. Michigan Ave. Chicago, Ill. \$25,000,000.

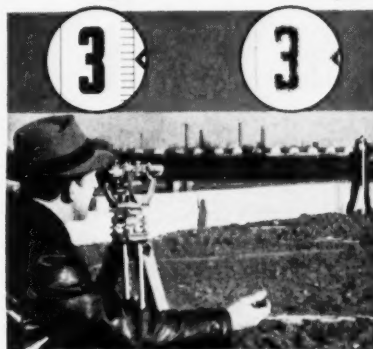
Western Contracting Corp., 400 Benson Blvd., Sioux City, Iowa. Four steel beam bridges and three reinforced-concrete box culverts for drainage, including grading, drainage, structures, paving, approximately 4.6 mi. Turnpike Roadway from point on Prospect St., to point 1.1 mi east of Summit-Portage County line; six steel-beam bridges, one steel arch bridge, one plate girder bridge, the east abutments of the twin bridges over the Cuyahoga River and one reinforced-concrete box culvert for drainage including construction, grading, drainage, structures, and paving of approximately 4.64 mi. of Turnpike roadway from the eastern end of Cuyahoga River Bridge and extending eastwardly to point on Prospect Bridge, northwest of Hudson Summit Co. for Ohio Turnpike Comm., 139 E. Gay St., Columbus, Ohio. \$10,030,453.

Maxon Construction Co. 131 N. Ludlow St., Dayton, Ohio. Patterson-Riverside Bridge, four-lane, Dayton, Ohio, for City, Dept. of Service and Buildings, 500 Municipal Bldg., Dayton 2, Ohio. \$1,044,628.

Algernon Blair Co., First National Bank Bldg., Montgomery, Ala. residential development on 450-acre tract of land consisting of 1,198 garden-type apartments, 528 triple-attached buildings, 866 semi-detached apartments, 164 single homes, and shopping center at Landover, Md. Frank Construction Co. 1923 L St., N.W. and Pierre Ghent & Assoc., 1836 Jefferson Pl. N.W. Washington, D.C., engineers. \$40,000,000.

Ask the man behind the "gun"

Coated optics give you this not this

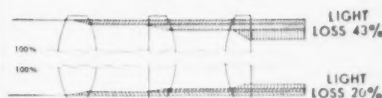


Model 3000, \$195.00*, complete with tripod.

with a White Universal Level-Transit

HERE'S what coated optics do for you. You can put in a full day without eyestrain or headache. There's less chance for a mis-reading. You get a clear, sharp sight—not a fuzzy image. What's more, you get your reading in far less time. Check this diagram. See for yourself how coated optics pass through up to 40% more light, provide a clearer image contrast.

PASSAGE OF LIGHT THROUGH
UNCOATED LENSES



PASSAGE OF LIGHT THROUGH
COATED LENSES

And there's more!

White Universal Level-Transits also offer you internal focusing, guarded vertical arc and ball bearing race which insures smooth operation, even in sub-zero temperatures. Check one out on your next trip. You'll soon be convinced a White can make your work faster, easier, more accurate. . . . Write for Bulletin 1053. DAVID WHITE CO., 343 W. Court Street, Milwaukee 12, Wisconsin.



Expert REPAIR
SERVICE on all
makes, all types
of instruments

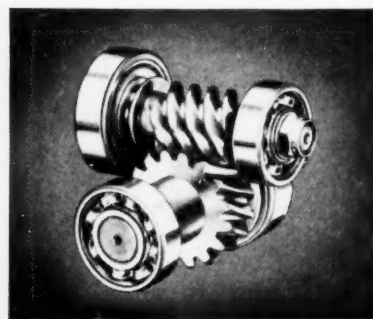
*Prices subject to change without notice.

"We can see the cut...produce 30% faster with **SKIL** Saws"

—says **James Morrison**,
foreman,
Joseph R. Farrell, Inc.,
Philadelphia, Pa.

"We have 18 saws, *all* of them SKIL," says foreman Morrison of this commercial and industrial construction organization. "Position of blade and balance give us maximum accuracy, easier handling and faster production. And the main reason we swear by SKIL Saws is the worm gear—it gives us *more* than enough power for tough cutting!"

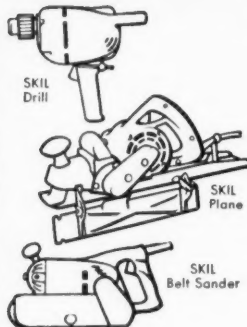
"What's more," Morrison continues, "with easy handling SKIL Saws you can make the cut right on the job—whether up on a scaffold or on the ground. We find awkward cuts are no problem with SKIL's one or two-hand operation."



Worm Gear Transmits Tremendous Power for tough cutting. This and other SKIL features are the answer to the popularity of the 13 SKIL Saw models. Designed for one or two-hand cutting in any position. New safety-guard retracting handle. Easier adjustments than any other make.



**You Can
See the Cut
With a
SKIL Saw
... A "Must"
for Maximum
Accuracy!**



SKIL

PORTABLE TOOLS

Made only by SKIL Corporation
formerly SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
3601 Dundas Street West, Toronto 9, Ontario
Factory Branches in All Leading Cities

See your Distributor or call your SKIL Factory Branch for complete information on the SKIL Saw line!

DEPENDABLE CONCRETE FORMING WITH ...



SNAP TIES



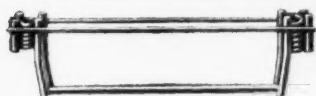
STANDARD COIL TIES



CONE-FAST COIL TIES



STANDARD HANGER FRAMES



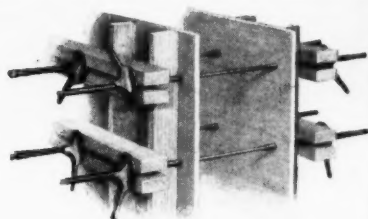
SPECIAL HANGER FRAMES



WIRE BEAM SADDLES



"PICK-UP" INSERTS
FOR "TILT-UP" SLABS



TILT LOCK CLAMPS

..SUPERIOR CONCRETE ACCESSORIES

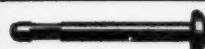
Here you see several of the many various types of Form Ties, Anchors and other concrete accessories which SUPERIOR'S many years of know-how and dependability have produced to meet rigid job specifications.

Every item in the SUPERIOR line is specifically designed to provide the most efficient forming method for ordinary foundations, engineering structures, watertight walls and architectural concrete.

When you plan form work, Superior's experienced engineers are always available to prepare suggested layouts of form work as well as complete estimates and quotations. For complete details request a copy of our 56-page catalog.



ROD CLAMPS



PANEL LOCK BOLTS



ADJUSTABLE
SCREED CHAIRS



CONE NUTS

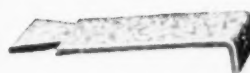
HEX. NUTS



Malleable



DOVETAIL ANCHORS
AND SLOT



SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office — 1775 Broadway, New York 19, N.Y.

Pacific Coast Plant — 2100 Williams St., San Leandro, Calif.

When you blast in an area like this...



Adjacent residential area.



Roadway near gas storage tanks.



Parking lot below roadway.



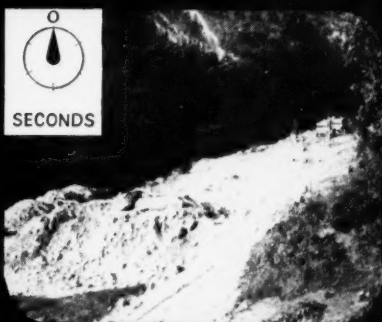
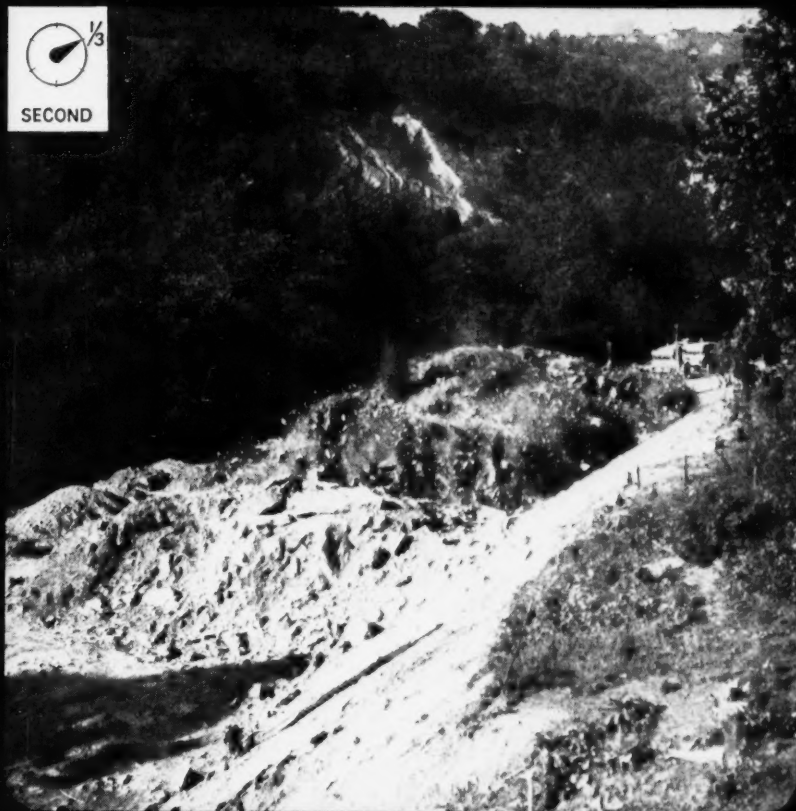
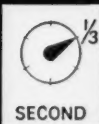
Instrument factory opposite blast area.

ABOVE are some of the blasting problems that faced the Central Pennsylvania Quarry, Striping and Construction Company on By-pass Route 22 through Easton, Pa. The highway passes gasoline storage tanks, business establishments, homes, a cemetery, a precision instrument factory and a parking lot full of cars. As a result, maximum control was imperative. Flying rock had to be minimized, yet good displacement was needed for easy digging.

The results of the ROCKMASTER blasting system on this job speak for themselves. The contractor obtained efficient use of force, controlled throw and maximum breakage. Noise, flying rock and vibration were kept to a minimum. The broken rock was blasted *toward* the slope and not scattered into the valley below.

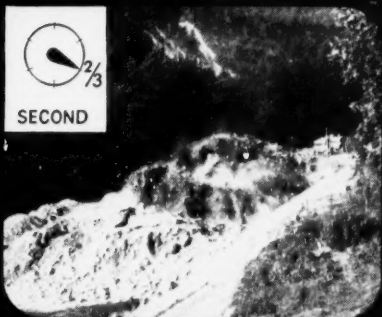
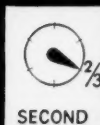
When you have shooting problems like this, ROCKMASTER can help you, too. Literature is available.

Rockmaster[®] can help you like this...



1. One section of the roadway . . .
100 holes loaded and ready to shoot.

2. Burden receiving full power of the explosives. Flying rocks eliminated.



3. Peak of blast. Confinement excellent. Burden moving up slope.



4. Full second after detonation. Gases appear but air blast avoided.



5. Final pile shows good displacement. See how it has "climbed" slope.



This is the pattern of the blast. It was loaded in five rows of twenty holes each, arranged to fire in ROCKMASTER periods shown at left.

1 & 2—Row 1

2 & 3—Row 2

3 & 4—Row 3

4 & 5—Row 4

6—Row 5



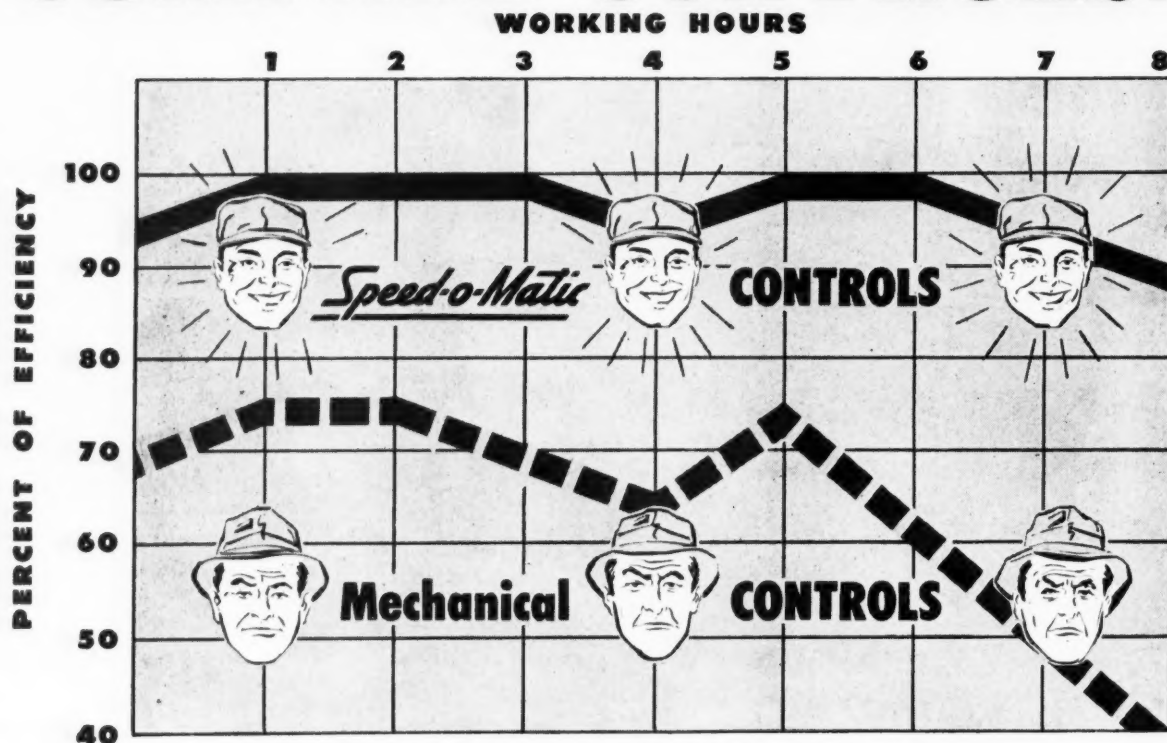
ATLAS EXPLOSIVES

"Everything for Blasting"

ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE
Offices in principal cities

Before you buy:

COMPARE CONTROLS!



Based on scientific analysis, this chart shows the penalty you pay for operator fatigue when your machines have manual controls as compared to Speed-o-Matic controls.

Link-Belt Speeders with *Speed-o-Matic* controls boost your production up to 25%

THE exclusive Link-Belt Speeder power hydraulic control system provides instant, smooth response for faster working cycles. Finger-tip-operated, Speed-o-Matic controls permit the operator to feel the load at all times for fast, safe, accurate, smooth operation. There's no jerk, jump, or lag. And . . . because Speed-o-Matic is so easy on the operator . . . costly end-of-the-shift letdowns are eliminated.

This system's simplicity and freedom from mechanical linkage cuts overall maintenance and minimizes the need for clutch adjustment. Some Link-Belt Speeder owners report using these outstanding rigs for months without a clutch adjustment.

For details on the Link-Belt Speeder line of crawler, truck and wheel-mounted models, write for catalog 2373.

LINK-BELT SPEEDER CORPORATION
Cedar Rapids, Iowa

12,254



Digging blasted rock like this can be a "rig-and-man-killer." But on this 1½ yard Link-Belt Speeder K-360 with Speed-o-Matic controls, fingers do the work instead of muscles and digging shock on machine components is minimized.

LINK-BELT SPEEDER CORPORATION

BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND
WHEEL-MOUNTED SHOVEL-CRANES

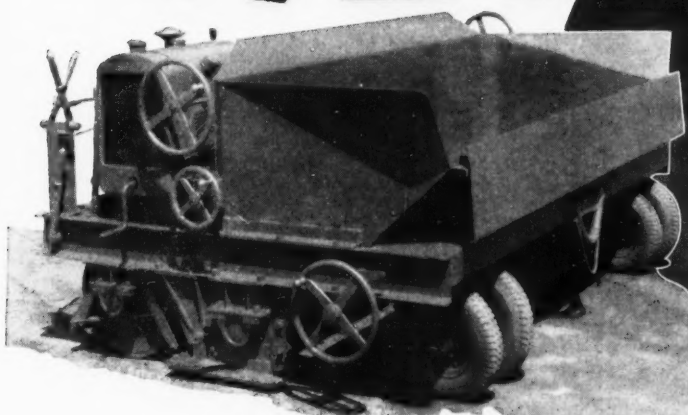
**FACTORY-TRAINED
DISTRIBUTOR SALES
AND SERVICE SPECIALISTS
...EVERYWHERE**

A NEW

BLACK TOP PAVER

ADNUN JR

MODEL 8

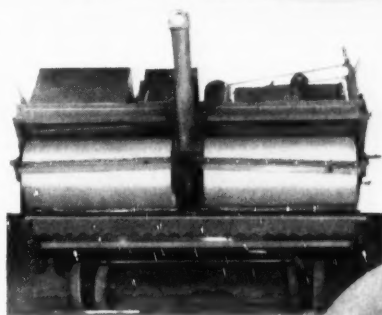


HERE is the greatest advancement in small tow type asphalt paving machines ever offered the contractor! The Adnun Jr. is in no sense to be compared with the ordinary hopper and screed on wheels. There is nothing like it! It is a highly engineered, quality, precision, paving tool.

It is self-maneuvering without load. Power reduces relocation time. The 2-ton capacity hopper is equipped with a powered Raker Bar. An Oscillating Screed *cuts* the material off at the right thickness without troweling fats to the surface. Overlapping action makes a tight, compact joint and reduces raking. Dual control assures easy handling from either side of the machine. Easy adjustment takes care of practically every requirement that you will meet.

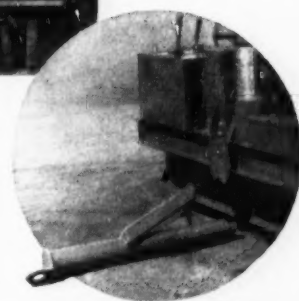
The smoothness of course surface approaches that of large highway machines due to the Adnun principle of Continuous Coarse Correction. This principle reduces surface error with each successive course.

Here is the answer to the parking lot, driveway, tennis court type of job. It does them more cheaply—does them faster—does a better job. There is a new bulletin! Let us send you one.



The underside of the Adnun Jr. Model 8 showing the Cutter Bar.

No trailer is needed for the Adnun Jr. The removable Trailer Hitch permits the Adnun Jr. to be lifted by the truck hoist and towed away.



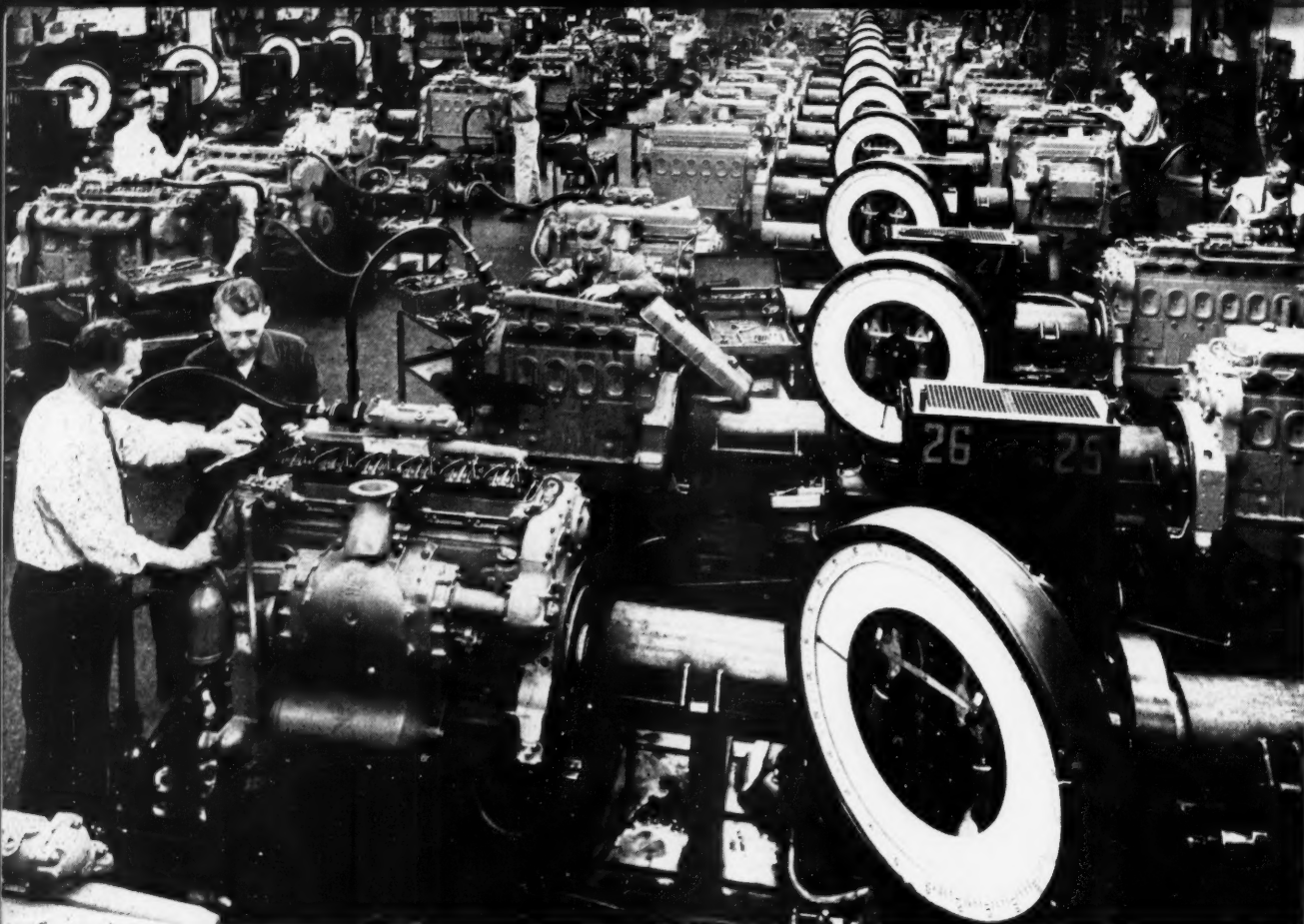
ADNUN JR

MODEL 8

BLACK TOP PAVER

**BLAW-KNOX
COMPANY**
FOOTE CONSTRUCTION
EQUIPMENT DIVISION
1910 State Street,
NUNDA, NEW YORK





Dynamometer Tests assure that every Diesel engine built by Detroit Diesel Engine Division will deliver its rated power. Every GM Diesel is subjected to several hours of run-in and testing on a dynamometer before it is readied for shipment. In this "basic engine" dynamometer

test room, many engines of all sizes may be tested at one time. Other test stands are provided for multiple engine units and for final testing (with accessories) of "package power" units and generator sets.

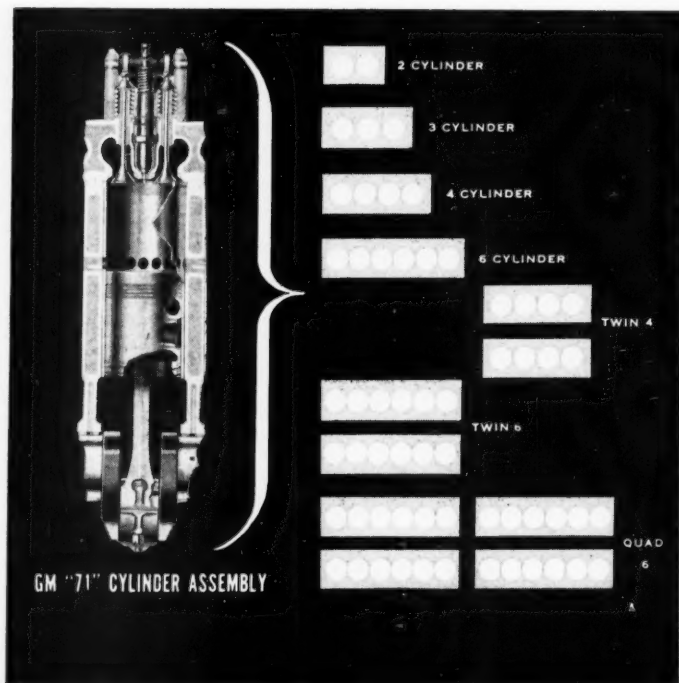
Low-Cost Diesel Performance Begins at Home

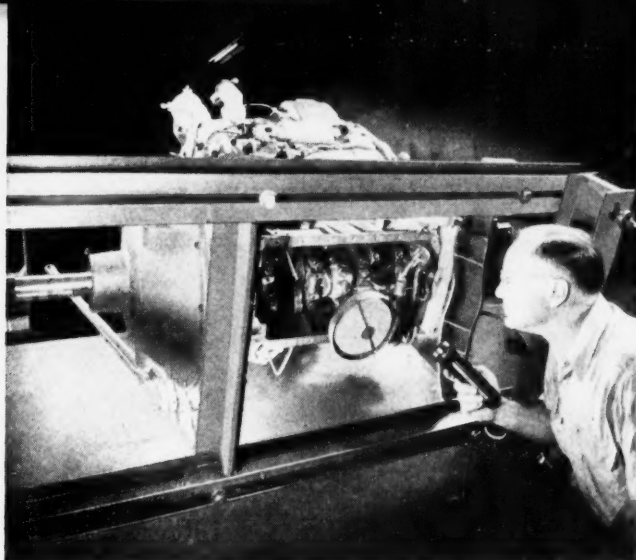
A trip through the Detroit Diesel Plant would show you why General Motors Diesel engines have won worldwide recognition for delivering power at the lowest cost per horsepower hour.

At every step—from our research laboratories straight through to final assembly—you'll see the precautions we take to insure engines of highest quality. You'll see it in the metallurgical tests we give raw materials. You'll see it in the many individual inspections we make on a single engine during assembly. And you'll find it reflected in the performance records of GM Diesel engines in every field.

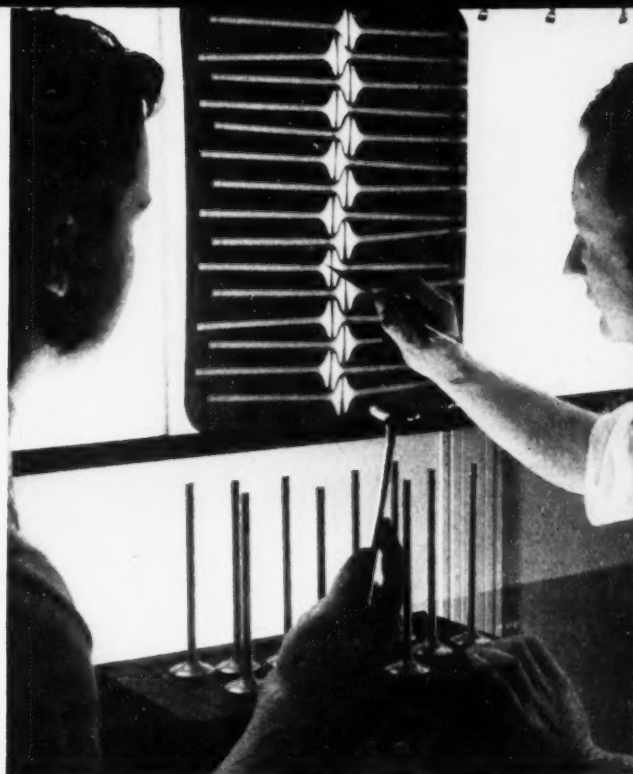
More than 58,000,000 horsepower in Diesel engines produced by Detroit Diesel since 1937—a record of production unmatched by any other Diesel engine builder—speaks volumes for the dependable, low-cost performance of this modern Diesel power.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN

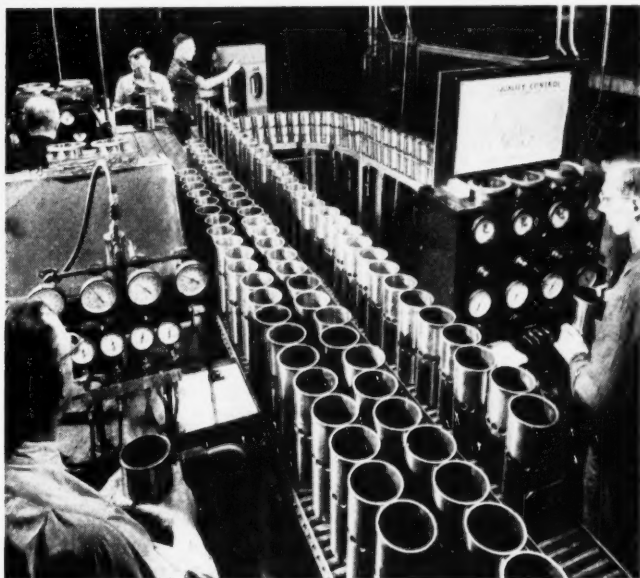




"Bottom" Inspection—After an engine is run in on the dynamometer, it is placed on this tilting rack to turn it on its side for final inspection of the oil pump, crankshaft, connecting rods, bearings, pistons and lower cylinder walls. A GM Diesel is ready for full load operation the minute it is delivered.

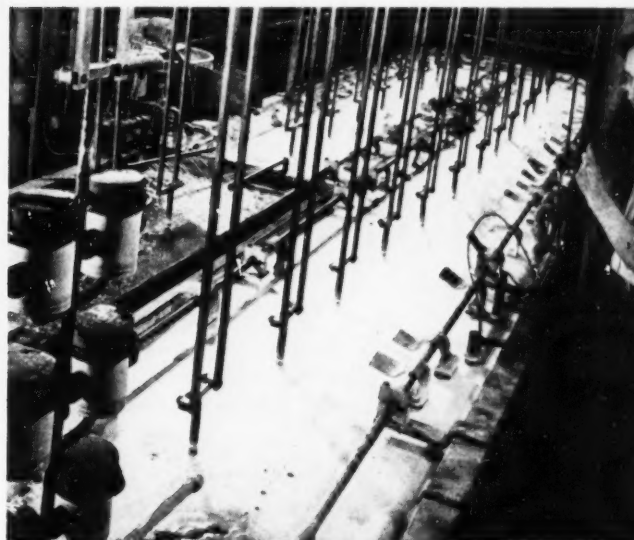


X-Ray Testing—The metallurgical chief and his assistant here inspect an X-ray film of a number of exhaust valves. In our completely equipped metallurgical lab, a 250,000-volt X-ray machine is used to detect any hidden defects in material samples.



Final Liner Inspection—Pneumatic gauges automatically indicate roundness and inside and outside diameter at several points simultaneously. The extremely close tolerances maintained on all liner dimensions are among reasons why GM Diesel buses average 150,000 to 200,000 miles between engine overhauls.

Real Parts Interchangeability saves money for GM Diesel owners. All of the vital working parts shown at the left (plus many more) fit all GM Series 71 engines from 2- to 24-cylinder models. This unique GM Diesel feature means that an owner of several different "71" engines needs only one small stock of basic parts to service any engine in his fleet, thus cutting equipment down time and reducing inventory investment. Moreover, mass production of standardized parts means that parts are more readily available—and they cost far less.



Tin-Plating Pistons—All GM Diesel engine pistons are electrolytically coated with tin plate. This tin coating, which permanently reduces friction between piston and cylinder liner, stays on for the life of the piston. Another good reason for standardizing on GM Diesels and genuine GM Diesel parts.



It pays to STANDARDIZE on

Single Engines . . . 16 to 275 H.P.
Multiple Units . . . Up to 840 H.P.



PUMP'S FINE TODAY... BUT HOW ABOUT TOMORROW?

With Rex and only Rex

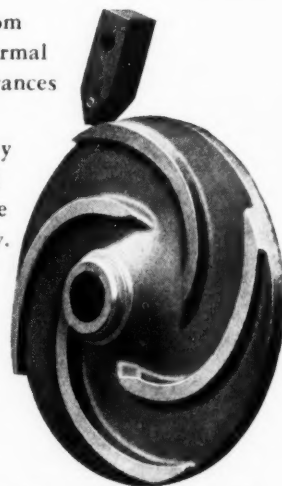
You're assured new pump efficiency
for the lifetime of the pump because . . .

ONLY REX HAS THE ADJUSTABLE AIR PEELER!

Every self-priming, centrifugal pump must have an air peeler to remove air from the suction line and create the vacuum that draws water up to the impeller. Normal wear on the peeler and fast-moving impeller destroys the necessary close clearances between these parts . . . reducing both priming and pumping efficiency.

Here's where *Rex alone* can maintain original priming and pumping efficiency for life. A simple adjustment of the *exclusive Patented Adjustable Air Peeler* and you've restored its original close clearance with the impeller. Just a twist of the wrist and you've restored new pump efficiency . . . for today . . . and tomorrow.

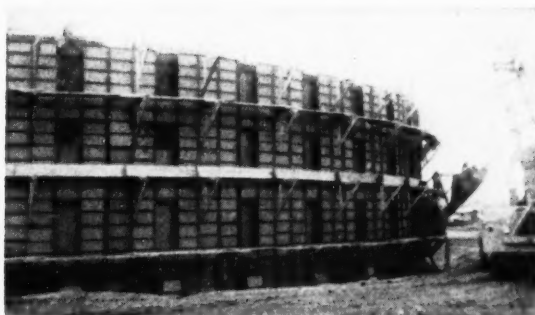
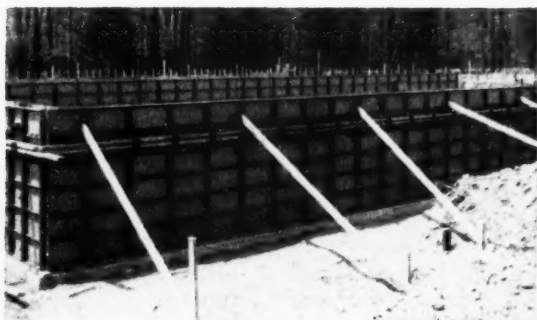
Get all the details on this and other
exclusive Rex features from your local
Rex distributor or write to Chain Belt Company,
4664 W. Greenfield Ave., Milwaukee 1, Wis.



CONSTRUCTION MACHINERY

Versatile

Atlas Compo Forms make any shape



SOME SPECS. ON ATLAS COMPO FORMS

Heights, 4', 5', 6', 7', 8'.
Widths, 12", 16", 18", 24".
Panels interchangeable, no rights or lefts.
Panels of different heights can be combined.
For low, high, round, rectangular structures, and for slabs.
Pilasters, inserts, easily accommodated.
Inside and outside corners, steel fillers and special shapes available from stock.

IRVINGTON FORM & TANK CORPORATION

Compo Form Division

20 Vesey Street, New York, N. Y.

Whether your concrete construction is rectangular, round, hexagonal, irregular, slab, battered — use the same quick-erecting, easy stripping Atlas Compo Forms over and over again for all the different shapes.

Tough, though lightweight, the panels consist of plastic-faced plywood framed and reinforced with pressed steel channels. You don't need walers, you don't need wood wedges, you don't have to drive any nails. One row of double 2 x 4's maintains alignment.

Easy to work with, a pleasure to handle, Atlas Compo Forms do a quicker, satisfactory, money-saving job. They eliminate on-the-job irritations.

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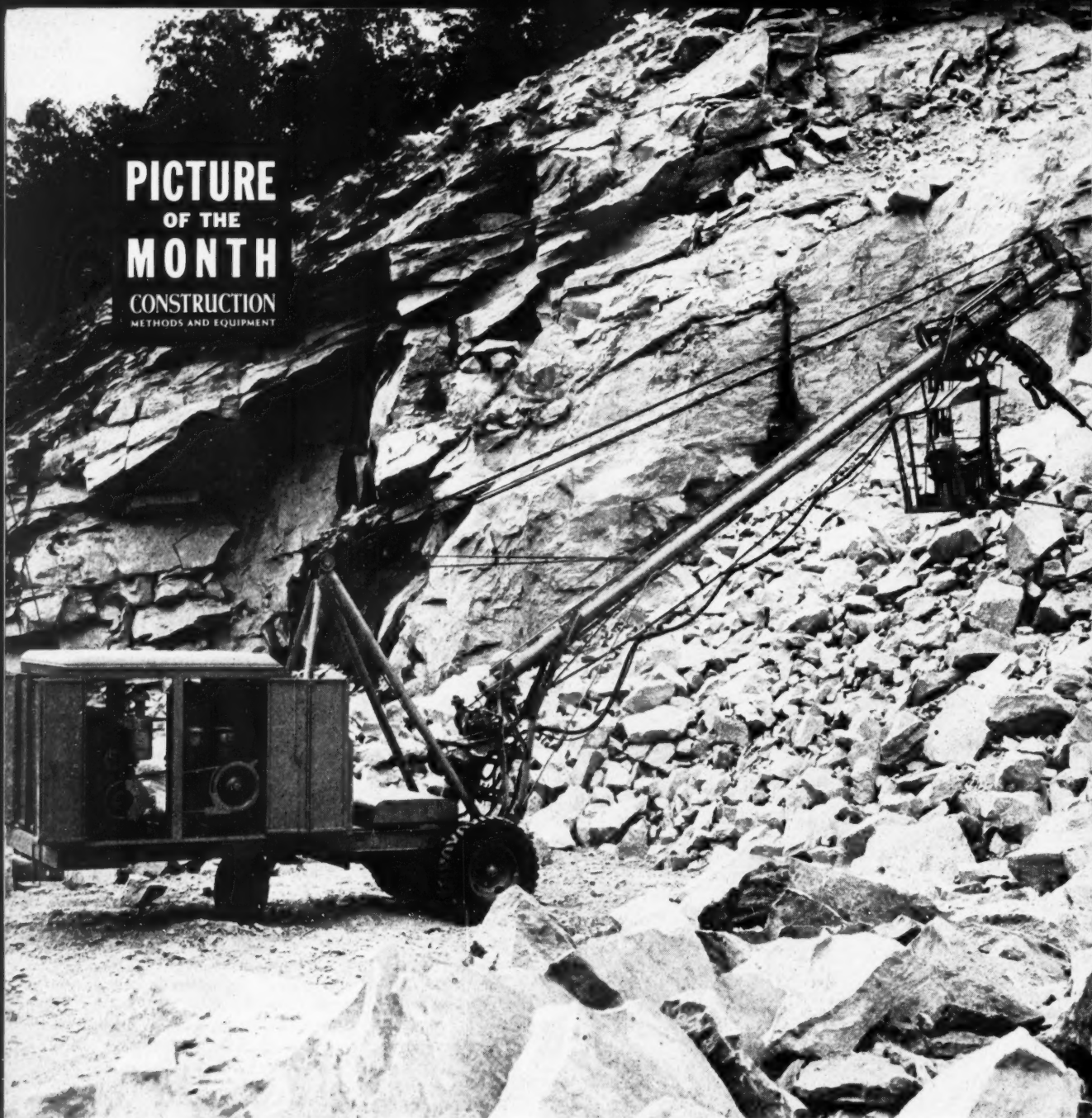
☐ Cost Case Histories

NAME _____

FIRM _____

ADDRESS _____

**PICTURE
OF THE
MONTH**
CONSTRUCTION
METHODS AND EQUIPMENT



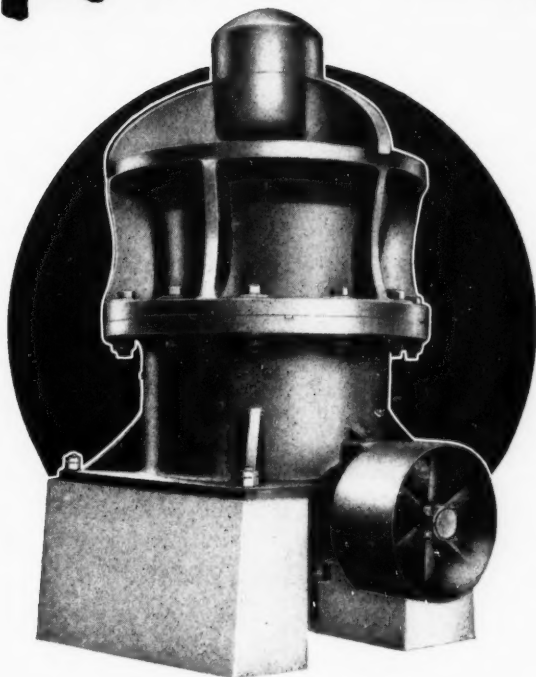
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A cushioned seat with a roof overhead and side curtains for protection against rough weather may appear to be excessive coddling of a jackhammer operator. But this one does the work of 8 or 9 men with one handy self-propelled machine. Secondary drilling of oversize boulders often is a tedious and expensive job because of the hard labor involved and rough handling that hammers, drills and hose receive as they are dragged over rock and battered under the worst type of drilling conditions. Down in North Carolina this Travel Drill is taking the wear and tear off both men and machines. It has a 40-ft boom mounting the operator's chair and all controls. The trolley-mounted chair rolls in and out along the boom, and the trolley also carries a 3-in. drifter with 4-ft screw-feed ahead of the operator. Unit drills boulders in any position and up to 35 ft above the ground. Air for drilling and propulsion is supplied at 100 psi by a 230-cu ft Gardner-Denver compressor driven by V-belts from a Caterpillar diesel engine. Hydraulic controls make it easy to position the drill, keep the operator out of most of the dust.

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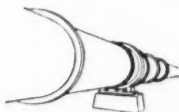
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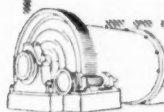
Primary Gyratory Crushers



Rotary Kilns



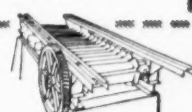
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Wheelbases: Five or more available	✓			✓	✓	
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Brakes: Vacuum hydraulic—lining area 542 sq. in. or more Air—lining area 569 sq. in. or more	✓	N.O.	N.O.	✓	✓	
Cab: Deluxe cab available Curved one-piece windshield Total glass area—2103 sq. in. or more Hip room—60.75 in. or more Seat shock snubbers	✓			✓	✓	✓
Engine: V-8 type Max. horsepower—155 or more Horsepower per cubic inch displace- ment—488 or more	✓	✓	✓	✓	✓	✓
Frame: Side rail depth—9 in. or more Inside reinforcement Section modulus—13.83 or more	✓	✓	✓	✓		✓
Springs: Front—total capacity (at pad)— 6000 lbs. or more Rear—total capacity (at pad)— 20,000 lbs. or more	✓				N.P.	✓
Turning diameter: 45.9 ft. or less	✓	✓	✓	✓	✓	✓
Transmission: Synchronized type 5-speed direct or overdrive available	✓	✓	✓	✓	✓	N.P.
Rear Axle: 21,000 lbs. or more						

N.O.—Not Offered
N.P.—Not Published
Above data based on latest information available as of 8-24-53

Construction News in Pictures



LONG REACH FOR CHEMICALS—M. W. Kellogg Co. has made it a habit to use towering guy derricks in the construction of oil refineries and similar process plants the world around. Here is a 150-ft mast on top of a steel tower some 70 ft high. The location is in South Africa where Kellogg is erecting a gasoline-from-coal plant. Boom is about to be lifted into position.



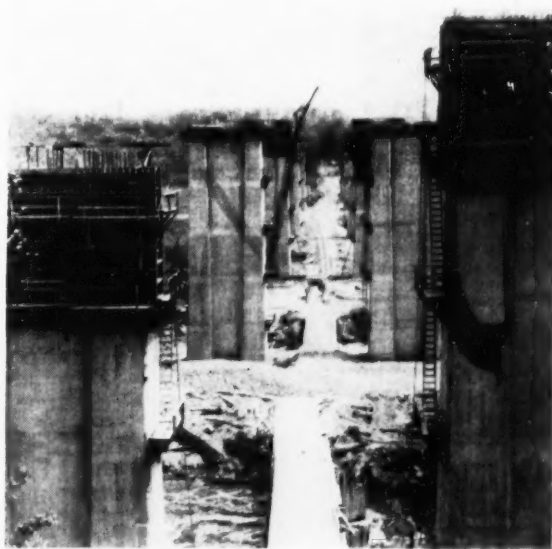
BOXED IN A FIRE—A tractor inside this Armco Steelpox building in Illinois caught fire. Gasoline from the 300-gal exterior tank fed the flames when a hose connection burned through. The door burned, steel panels warped, but structure remained intact.



INTERNATIONAL BLEND—Construction equipment products of two nations blended happily recently when the Concrete Transport Mixer Co. delivered six of its power take-off-operated Hi-Lo truck mixers to Japan. There they were mounted on Japanese diesel trucks manufactured by Hino Diesel Industry Co. Diesels are popular in Japan because of the prohibitive cost of gasoline.

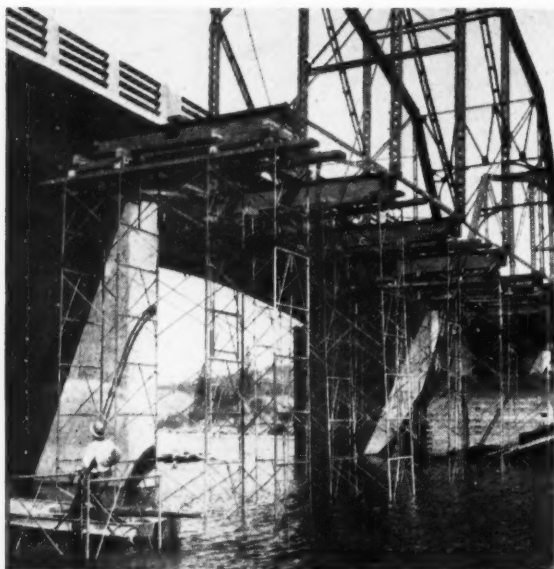


BUILDS OWN TRANSPORTATION—Lorain crane is used to help construct a log raft—a raft that later floated the Lorain about 60 mi to a gravel deposit where it became a dragline to dig and load gravel on barges. This is near Ketchikan, Alaska, where construction of a 300-ton paper mill was begun last year. The general construction contract was awarded to Howard S. Wright and Co., Seattle, and Guy F. Atkinson Co., San Francisco.



TURNPIKE BRIDGE—Construction of the Ohio Turnpike has gone forward in fits and starts, the project having been beset by numerous legal battles which have brought on serious delays. Work on the major bridge structures, however, has gone forward from the beginning—the first earthmoving having been done for a bridge foundation. These concrete piers tower more than 100 ft above the Cuyahoga River at Peninsula.—Wide World photo

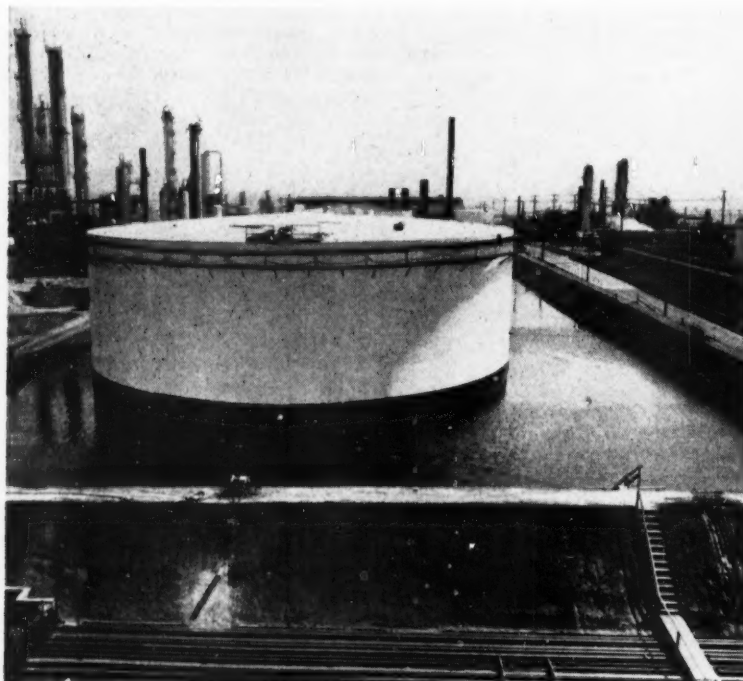
Construction News in Pictures... Continued



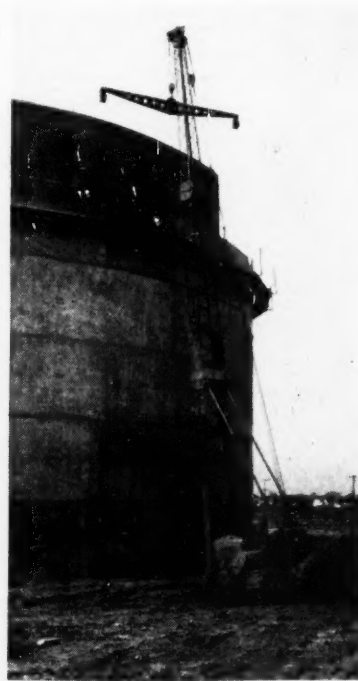
BRIDGE ON A SCAFFOLD—This 35-yr-old Spokane River bridge in Washington recently was dismantled in sections and trucked to a new site for re-erection. Safway steel scaffolding was set up on stream bottom to support parts of the 80-ton steel structure during moving operations. The outmoded bridge has been replaced by the new concrete structure in the background. The Roy L. Bair Co., Spokane, was contractor.



GUN PLUGS DAM—Spalling on the back face of a Duke Power Co. concrete dam at Morgantown, N. C., was halted with air-placed concrete. Crumbling concrete was removed, the surface was sandblasted, and a sand-cement mix blown on the cleaned area to form an absolute bond with existing concrete and create a dense protective cover against future seepage, freezing and crumbling. A single Bondactor machine did the work.



MOVING DAY—Union Oil Co. wanted to move an 80,000-bbl LPG storage tank 200 ft at its Los Angeles refinery. Such operations normally entail dismantling, moving and re-erection. But the estimated cost of \$60,000 seemed a big price for a move of 200 ft. Instead, the tank was floated. The tank bottom was loosened as much as possible, and roof and walls braced internally. Water was pumped into the surrounding dyked area and the tank pulled to the new spot in 45 min with four air tuggers—at a cost of \$5,000.



HIGH HANDER—Horton Steel Works, Fort Erie, Ontario, equipped the Trackson sideboom on its Caterpillar D6 with a 60-ft boom. Now the machine lifts plates into position during the erection of oil storage tanks.



Move More with a **MICHIGAN**

"Fast, easy to operate, simple to adjust—ideal machine for owner and operator"—R. E. GOODSON, owner

JOB Drainage ditch about ½ mile long—12' top, 10' bottom, 8' deep, Olanta, S. C.

MACHINE C-16, dragline

OWNER R. E. Goodson, Darlington, S. C.

YARDAGE 450 per day

MATERIAL . . . Gumbo clay

FUEL 15 gallons, 10 hours

COMMENT . . . "Best machine ever operated. Air control outstanding feature . . . extremely fast, few adjustments, operator fatigue absolute minimum. Perfect flotation with 30" pads—on hills, in swamp. Easy to inspect all working parts"—Dave Blackmon, operator.

Here's why 3 of every 5 MICHIGANS sold are repeat orders!

- **AIR CONTROL—FAST, SMOOTH, EASY.** Production goes up, fatigue goes down, with a MICHIGAN. Swing is fast, smooth, jerkless—easier on the machine, easier on the operator. It's the air-power pioneer—the MICHIGAN Line.
- **ONE-PIECE CIRCLE GEAR AND CARBODY.** A long, useful and economical life is built into MICHIGANS by the circle gear and carbody cast in one piece. Hook roller paths taper to match the rollers.
- **CAST TURNABLE FOR UNINTERRUPTED SERVICE.** Here's construction usually found in biggest machines: turntable deck, side frames and hook roller mounting brackets

cast integral. Eliminates common cause of wear and replacement.

- **MS CLUTCH . . . QUICKLY REPLACEABLE.** An exclusive MICHIGAN feature—this single-disc double-faced clutch with six interchangeable segments on each face. Replace a clutch in the field in a matter of minutes. Always efficient, and an amazing time-saver.
- **EASY MAINTENANCE AND SERVICE.** Grease the job in minutes per day, compared to 1 or 2 hours usually required. Anti-friction bearings reduce maintenance. Air control does away with complicated linkages—toggles, joints, bushings—thus eliminating tedious greasing.

See the MICHIGAN Line in action. Watch these big rugged machines, note the speed and ease and precision with which they operate. Check each one, point by point, with machines of equal capacity. You'll recognize that you get More for Your Money in a MICHIGAN.

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in this sand and gravel excavation in Indiana....**

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Harold W. Richardson, Editor

What's Used Equipment Worth?

ONE SWALLOW doesn't make a summer, nor does one used equipment auction sale definitely establish current values on every item sold at that sale. Yet, a large, well-conducted, above-board sale such as occurred at the Alban Tractor Co., Inc., in Baltimore on September 21, indicates some interesting trends.

It was an honest sale of Alban's own equipment only, taken in on recent trades, with each item accurately described in the sales catalog. Forke Bros., auctioneers, handled it well, and insisted that everything offered be sold, and that no Alban representative be allowed to bid. Details of the sale, with some representative price ranges, are given in an article on page 26 of this issue.

Analysis of this sale leads us to several general conclusions. First of all, used equipment isn't worth what contractors think it is on trade-ins. No longer can you contractors expect to turn in machinery at about the same price you paid for it three or four years ago, and walk away with new units at only the appreciation in cost. This is especially true in respect to big equipment.

Why? Just because practically nobody is interested in a few big used units. Look at what they brought at the sale. D8s commanded a top price of \$2,100. One bulldozer-equipped HD19 sold for \$6,600, top tractor price of the day, but other HD19s went from \$3,100 to \$5,850. Top price for a TD24 was \$5,700, they went as low as \$1,350. These prices are way below those expected up to now by contractors in trade-ins.

Smaller units fared better in price. Mainly, as we gathered from conversation at the sale, because they can be used as fill-in items in bigger plant spreads, and also because they appeal more to the small operator looking for used equipment. The fact that D2s sold for nearly twice as much as D8s emphasizes this point. Medium-size tractors out-sold larger units in several instances.

Obviously, the vagaries of a single auction sale preclude setting up these prices as actual values of used equipment. For example, why should two DW10 outfits bring \$10,300 each and two more, with consecutive serial numbers, sell for only \$7,100 apiece? Yet, the prices do indicate somewhat the values placed on used machinery by potential buyers, and those values will be considered by dealers when talking trade-in prices.

The relatively high value of used equipment over the last few years has been bolstered by lack of new units. Now with new machinery readily available, the used equipment market naturally is depressed. Why pay a high price for used items when new equipment costs but little more? Those inexorable laws of supply and demand are bound to spread the differential between used and new machinery.

Lower used equipment values will affect the sales of new equipment, too. So long as contractors could swap old machines for the same model new equipment at small cost investment, they

readily did so. Now, they will be better off fixing up the old and continuing to use it, rather than paying a lot for something new, but not much better. Perhaps they are already following this course, which may account for a drop in new equipment sales up to 25% over a year ago in the face of only a slight decrease in total contract awards.

New equipment sales are going to depend more and more upon the manufacturers offering something better.

Manufacturers offering new machines of better efficiency and greater production, backed by good service, will always find a good market. Those trying to sell like for like equipment, new replacing old, will have much tougher going.

What's used equipment worth? When somebody's buying, not so much as it used to be worth. And that goes for your trade-in value, too, fellows. Might as well face it.

Rich

CURTIS W. MCGRAW



We of McGraw-Hill Publishing Co. suffered a stunning loss in the sudden death of our beloved president and chairman, Curtis W. McGraw, on September 10 at the age of 57. Our loss is shared by the entire business and technical press, for he was ever a champion of higher publishing ethics and editorial integrity. He was devoted to the task of keeping business well informed, and shaping the technical development of industry. He held a deep faith and pride in America, and constantly endeavored to make the people aware of the greatness and potential might of their nation.

Mr. McGraw spent his entire business life with McGraw-Hill, which he joined upon being graduated from Princeton University in 1920. He worked his way to the top, becoming president and chairman 3½ yr ago. His friendly, kind and humane attitude toward each and every

employee of the company, and his genuine concern over their welfare set an example that might well be followed by any industrial leader.

Of all his numerous outside activities, such as director of several firms and officer of many associations, typically he was most proud of being president of Princeton Hospital, in his home town of Princeton, N. J. In recognition of this interest, McGraw-Hill employees are establishing a Princeton Hospital Memorial Fund in his memory.

A great and good man has passed on.



RAPID FILLING of bottom-dump Euclid trucks is made possible by a 12-ft high side-cutting blade attached to a Euclid loader hauled

by two Allis-Chalmers HD-20 tractors. Note scalloped appearance of bank where ditches were dug to dry out wet borrow area.

Side-Cutting Euclid Loader



HEAD-ON VIEW accentuates height of side-cutting blade on Euclid loader. Rigs travel at about 3 mph loading a 25-cu yd truck in 50 sec. On a good day as much as 6,000 cu yd of fill is moved out of this pit in a 9-hr shift.

FILL WORK on the 13,800,000-cu yd Palisades Dam in southwestern Idaho—the Bureau of Reclamation's largest earth fill—got under way in earnest this season after a year's preliminary operation (CM&E, March, 1953, p.96). Biggest push by Palisades Contractors (a combination of J. A. Jones Construction Co., Charlotte, N. C., and Seattle, Wash., and Charles H. Thompson Co., Washington, D.C.) was on impervious fill. Three rigs—an elevating loader, a shovel, and a dragline—loaded as much as 20,000 cu yd of this material a day, a side-cutting Euclid loader having the highest hourly production. Fill work was complicated by one borrow pit that was too wet, another that was too dry and by delayed completion of diversion tunnels.

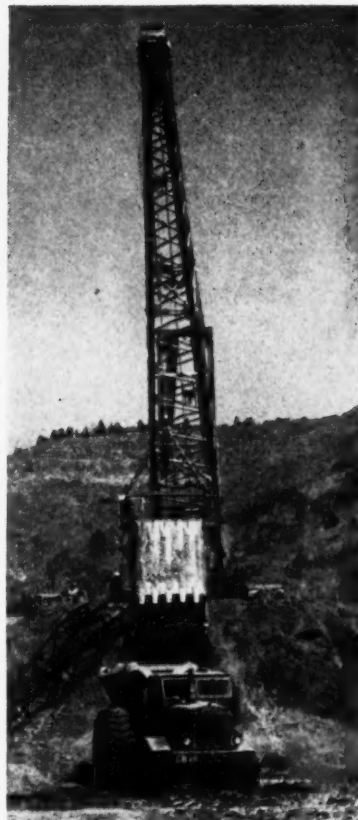
Placed in operation during the 1953 season was a separation plant that removes over-size rock (more than 5 in.) from Zone 2 fill.

To meet the 4-yr schedule for building the dam, Palisades Contractors aimed at placing more than 3,000,000 cu yd of fill in 1953 (about 1,000,000 was placed in 1952). The 2,250-ft base width includes a blanket of impervious material for about 3/5ths the width. That's why emphasis during 1953 had to be on this kind of fill.

Impervious fill comes from two borrow pits, one a



IMPERVIOUS FILL is loaded from another borrow pit by a Manitowoc 4500 shovel with a 5 1/2-cu yd dipper. This rig can load 8,000 cu yd a day in two 9-hr shifts. Another rig (right) loading impervi-



ous fill is Manitowoc 4500 dragline with 7-cu yd bucket. Dragline generally operates uphill from shovel where its long boom can reach more material.

Speeds Palisades Dam Fill

By L. L. WISE, Associate Editor

mile upstream from the dam and the other 2 mi downstream. The upstream pit is level and includes 3 1/2 million cu yd of material in a 10- to 14-ft depth. The nature of the material and its arrangement makes it ideal for loading with an elevating loader equipped with a side-cutting attachment. But the material is naturally wet, and this limits the time available for excavation. This pit cannot be worked until late enough in the season when it would be partly dried out. Yet, as more than half the Zone 1 impervious fill must come from here, the contractor has used all sorts of expedients to work the area.

After the wet pit was stripped of surface material, ditches were cut in it to facilitate drying. But the best moisture control method has been to open up enough face for the side-cutting Euclid loader so that natural drying out occurs between passes. The contractor has found that if there is at least 45 min between passes of the loader, the moisture content will fall 2 or 3%. Corridors through the stripped borrow area have been dragline excavated. Some of the material thus removed has been loaded directly in trucks. But, when wet material is encountered, the draglines side cast where the soil will be later picked up by the Euclid loader.

This means that the loader can only operate during daylight hours when drying conditions are favorable. Thus, it is restricted to 1-shift operation. Nonetheless it has loaded as much as 6,000 cu yd a day with 4 to 5,000 cu yd average.

The Euclid loader, pulled by two Allis-Chalmers HD-20 tractors, travels about 3 mph and loads a 25-cu yd truck in 50 sec, taking a 6-in. bite from the bank.

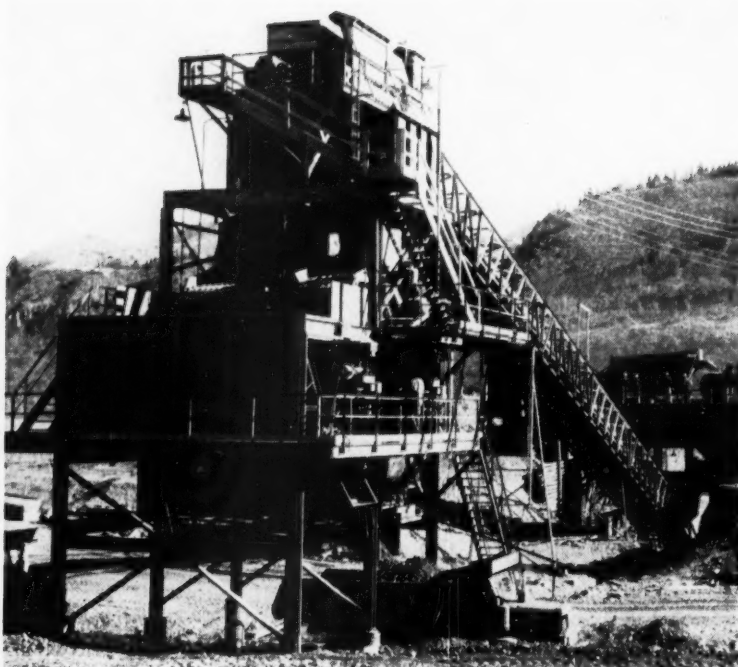
The downstream pit is on a steep side hill and is extremely dry. It can be operated under relatively adverse weather conditions, but usually needs moisture added. This is accomplished by hosing at the pit and sprinkling in the fill.

Shovel-Dragline Team Works Well

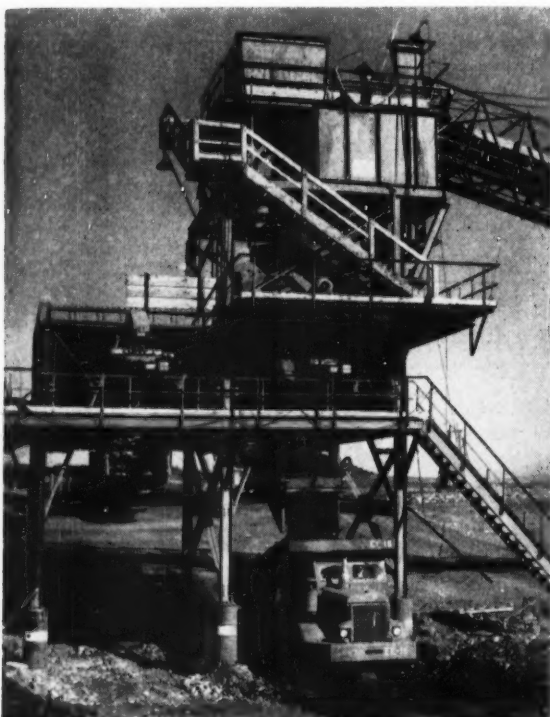
The contractor has found that a shovel (Manitowoc 4500 with 5 1/2-cu yd dipper) and a dragline (Manitowoc 4500 with 6 1/2-cu yd bucket) team well on this pit. The pit has been worked on a two 9-hr shifts a day basis with a good day being 5 to 6,000 cu yd from the dragline and 7 to 8,000 cu yd from the shovel. But this pit has only some 2,000,000 cu yd of suitable material and in excess of 5,000,000 cu yd is needed for the impervious fill. Thus, after the fill gets above the area of heavy impervious blanket, much of the Zone 1



MORE TRUCKS ARE LOADED by a Marion 111 dragline with a $4\frac{1}{2}$ -cu yd bucket. But this material is Zone 2 fill—includes cobbles and rock up to 5 in.—and must be processed at a separation plant to remove over-size material.



SEPARATION PLANT removes cobbles and rock larger than 5 in. from material for Palisades Dam's Zone 2. Bottom-dump Euclid feeds conveyor belt in background. Material then is lifted to pass over to Conveyco vibratory screens.



CHUTE LOADS 15-cu yd Euclid end-dump truck with Zone 2 material from separation plant. Over-size cobbles loaded from left-hand chute will be used for rock toe of dam or for a cobble and boulder blanket on the downstream slope of dam. Plant, new this year, replaces stationary grizzly, as higher production rates were necessary.

material will, of necessity, come from the upstream borrow pit.

Secondary zones of impervious fill are located just upstream and downstream from the dam's central core. This Zone 2 fill is similar to the central core except, that it can include cobbles and rock fragments as much as 5 in. in size (Zone 1 includes little or no rock). To develop capacity for processing Zone 2 material, the contractor has installed a separation plant that removes over-size material.

This plant includes an unloading structure where bottom-dump Euclids unload into a hopper. A plate feeder loads a conveyor belt that elevates the raw material to the screening plant. Two Conveyco 5-in. vibratory screens remove the over-size material. The plant is so arranged that when full production is reached, a bottom-dump Euclid will bring in raw material and also remove screened material for hauling to the fill. The truck will then return to the borrow area.

The separation plant replaces a stationary 5-in. grizzly that was used to develop some Zone 2 material in 1952. Capacity of the grizzly was not adequate. Oversize rock will be used for the dam's rock toe, or for a cobble and boulder blanket to be placed on the downstream slope of the dam.

Both Zones 1 and 2 material are handled similarly in the fill. They are dumped, spread into 6-in. layers, sprinkled (if necessary), and compacted by a sheeps-foot roller weighing 4,000 lb per lin ft.

Complicating the fill program is the fact that the parallel 26-ft dia. power and outlet tunnels to be used for river diversion were not completed in 1953. Instead, the river continued to flow down a channel on the right abutment of the structure. As the 1953



IMPORTANT STEPS IN FILL WORK include dumping, disking, watering, and rolling. Material is dumped by Euclid 25-cu yd bottom-dump truck, at right, and spread by Allis-Chalmers HD-20 bull-

dozer, while smaller tractor hauls disk that processes fill for proper moisture content. Water wagon moistens fill which is finally compacted by 40,000-lb McCoy rollers hauled by HD-20 tractors.

season wore on this became a serious limitation on fill area as the fill had to be placed on a 4 to 1 slope where it will bond with the material to be placed later. The contractor anticipates working through the winter on the tunnels, if necessary, so that diversion can be completed by the 1954 work season. This will permit full width filling on all zones in 1954.

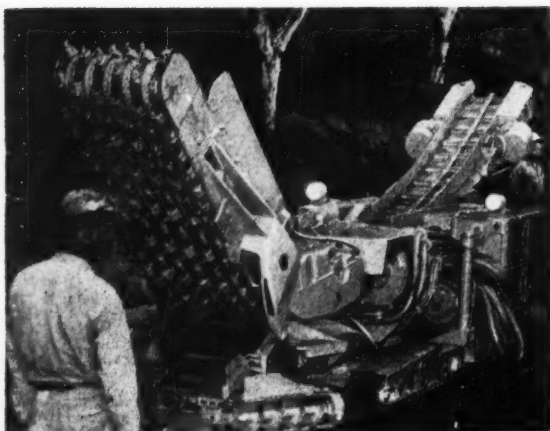
For Palisades Contractors, A. L. Pauls is project manager, Paul H. Swanson is assistant project manager and W. J. Kennish is general superintendent.

The project is directed by the Bureau of Reclamation for whom L. B. Ackerman is resident engineer, Gus Swanson is office engineer and Pat O'Donnell is field engineer.

The Easy But Expensive Way

WE WOULDN'T recommend to contractors this Army method of using a helicopter to help assemble a bridge for two very good reasons. At the moment you'd have just a little difficulty getting a helicopter of this type, as the Armed Forces take all the production. Then, too, you'd have to part with more than \$100,000 cash to get one which is a lot of money for a construction rig. Who knows, though, in 1960 or the future, "flying hooks" might be a familiar sight around construction jobs.—Photo courtesy Aviation Week





The Continuous Mining Machine..

● The crawler-mounted Joy machine was originally developed to dig and load coal in a continuous operation without any blasting. Carried on a 6-ft movable cutting-head at the front of the rig (at left in photo) are six parallel endless chains, each fitted with 28 bits or teeth. As the chains revolve, the 168 bits claw out material from the face and dump it on an integral conveyor in the miner to be carried to the rear for discharge into a muck car.

The cutting-head can be swung sideways to cover a face 16 ft wide, and can be moved down or up to dig from 5 in. below floor level to 98 in. above. The



Replacing ordinary drilling, loading, shooting and mucking operations, this...

Continuous Miner Digs Sewer Tunnel Through Shale

THEY'VE TAKEN a continuous mining machine out of the coal fields and stuck it underground in Ohio to dig a sewer tunnel—and it works. It's cutting a 12-ft circular bore through medium-hard shale at well over 20 ft per 8-hr day. In addition, the new tunneling technique has silenced complaints of near-by residents who objected to noise and claimed damage to their homes from the routine drilling and blasting method used at the start of the job.

As a matter of fact, because of this public clamor, the city of Euclid had to shut down its 4,000-ft tunnel project completely, even though the bore was 30 ft underground. Then the contractor, Cleveland's Na-

...What it is, what it does, and how it does it

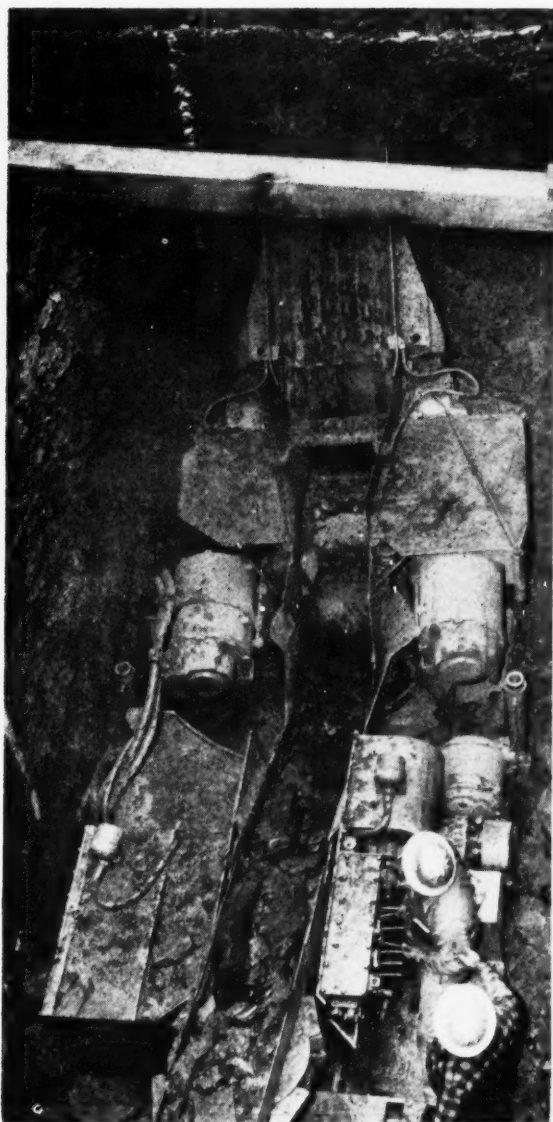
bits, which bite out overlapping paths, make a cut 30 in. wide. Maximum depth of cut into the face is 18 in. on each pass. Cutting rate in coal is $2\frac{1}{2}$ tons per min.

Like the head, the discharge conveyor at the rear is movable. It can be elevated to 100 in., and can be swung 45 deg to either side.

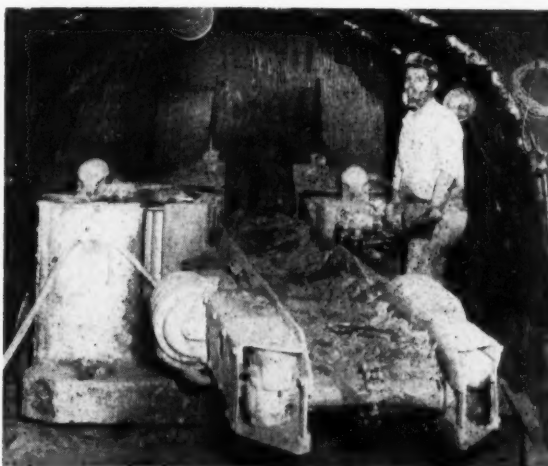
The continuous miner is electrically operated on 440-v, 3-phase, 60-cycle current. Two 65-hp motors drive the cutter-head and front conveyor, and also run a hydraulic pump that drives a pair of screw-type clean-up wings at the front of the machine near floor level. Two 3-hp motors drive the rear conveyor, and two $7\frac{1}{2}$ -

hp units drive the crawler mechanism. One 10-hp motor operates the hydraulic system that controls the positions of cutter-head, rear conveyor and clean-up scrolls. Another motor (made, like the others, by Reliance Electric & Engineering Co.) powers a separate high-pressure water spray that keeps down dust at the cutter-head.

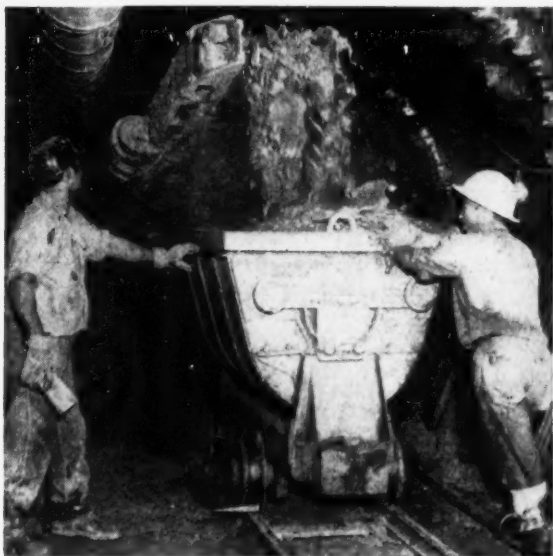
The Joy machine weighs about 25 tons. It is 4 ft high, $7\frac{1}{2}$ ft wide (requiring a minimum 10-ft operating width) and is $30\frac{1}{2}$ ft long. Because the control platform is more than half-way back on the machine, the operator remains in safety at least 15 ft from the face, and need not work up front under an unsupported roof.



HEADING IS TURNED after two cranes have lowered 25-ton mining machine to bottom of access shaft. Chain-mounted bits claw shale from the face, drop it back on conveyor for rear discharge.



FACE IS CUT in series of vertical paths 30 in. wide. Six parallel cutter chains revolve upward at front to do the digging, and also carry muck back to load the built-in flexible conveyor.



MUCK IS LOADED into mine car at rear of machine, which fills these 2-ton units in little more than 1 min. Both cutter-head and conveyor can be moved up or down and from side to side.



ROUNDED TUNNEL SECTION is result of careful machine operation guided by painted lines at frequent intervals. Rate of advance is more than 20 ft per 8-hr shift. This is top heading cut, and

mining machine will come back later to take out the bench. In foreground is passer on which muck cars are switched, and at left is stoper that drills holes for roof bolts to hold arch.

tional Construction Co., brought in a Joy continuous miner to finish the job with practically no noise, no blasting and no more complaints.

To start work on this unique application, the Joy machine (see description, p. 54) was lowered down a 12x32-ft shaft 30 ft deep. One tunnel heading had already been turned from this shaft, so the big machine had enough room to operate when beginning to drive the opposite one. Then, clawing at the shale, it dug its way into the ground. Now that operations are well under way, the machine advances the heading as much as 5 ft per hr, and consistently loads out 1½ yd in 1 to 1¼ min.

Because the tunnel's 12-ft dia exceeds the miner's 98-in. maximum digging elevation, attack is by top heading and bench method. The upper 7 to 8 ft of tunnel are

taken out first, then the machine goes back to remove the 4- to 5-ft bench.

The Joy machine is designed to dig a rectangular hole. However, by careful manipulation of cutter-head and crawlers, the continuous miner is made to cut the circular bore. Tunnel line and grade are painted on the face every 3 to 4 ft of advance to guide the machine operator. According to Charles E. Reyner, National Construction Co.'s secretary and engineer, overbreak in the flat-bedded shale is no greater than it was under drilling and blasting.

The continuous miner feeds muck into narrow-gage rail cars that are hauled by Atlas battery-powered locomotives. Loaded cars are hoisted to the surface by crane through 12x16-ft access shafts at 300-ft intervals. Shafts are dug from the top down, but only after

the miner has excavated the tunnel below and has advanced into the section beyond.

Through these access shafts, too, run power lines for the miner and air pipe for the heading. The ventilating setup consists of a single 40-hp exhaust fan sucking continuously through 12-in. Naylor pipe kept right close to the face.

Tunnel arch is supported by roof bolts, which are installed at the end of the shift after the mining machine is shut down. Usually, 7½-in. bolts 4 to 5 ft long are placed in a line of three across the roof every 6 ft. Holes for them are drilled from the bench by stoper.

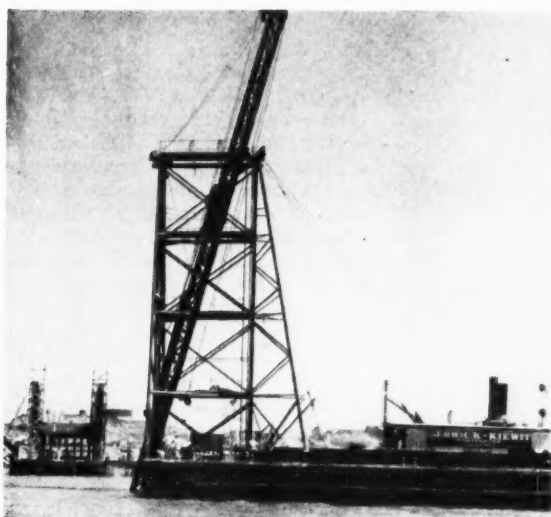
While driven diameter of the tunnel is 12 ft, finished is only 10. The 1-ft lining (some brick, some poured concrete) is installed immediately after the miner has completed a 300-ft stretch between shafts.



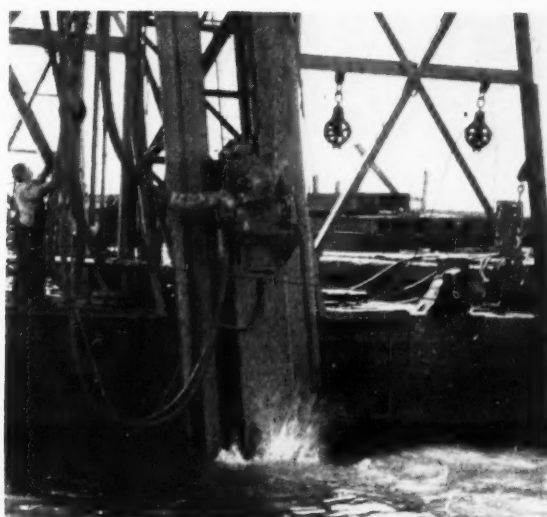
LARGEST FLOATING DRIVER on the West Coast, the Pacific Giant, picks up a 195-ft long steel H-pile to drive on construction of the Richmond-San Rafael Bridge near San Francisco. Equipment, mounted on a 38x108-ft barge with power coming from two 150-hp

boilers, has 120-ft leads in an 80-ft tower. Pacific Giant was built for the job by joint-venture contractors, Ben C. Gerwick, Inc., and Peter Kiewit Sons' Co. A sister-ship, the Pacific Titan, followed the "Giant" on the job. (Gerwick-Kiewit photos)

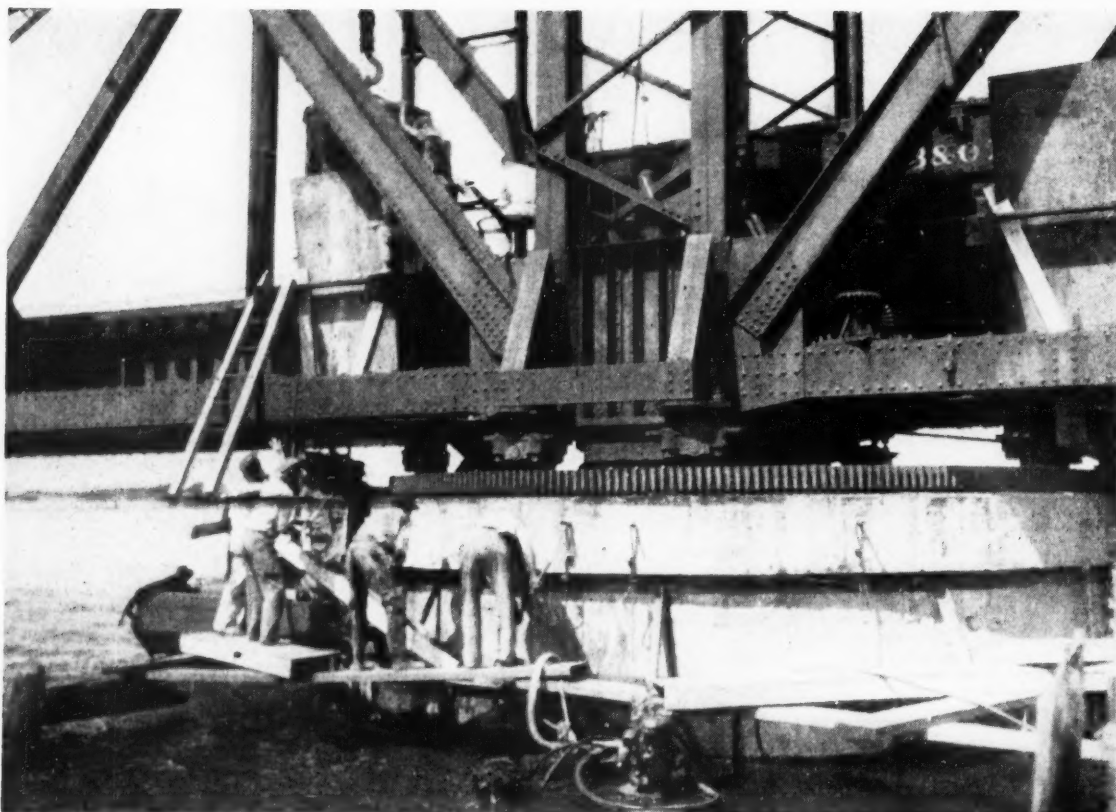
Giant Floating Driver Built for Bridge Job



LEADS ARE TILTED to drive up to 3 in 12 batter piles. Test piles up to 205 ft long in one piece have been driven by huge rig. The equipment will handle as routine 89-lb, 14-in. H-piles 180 ft long.



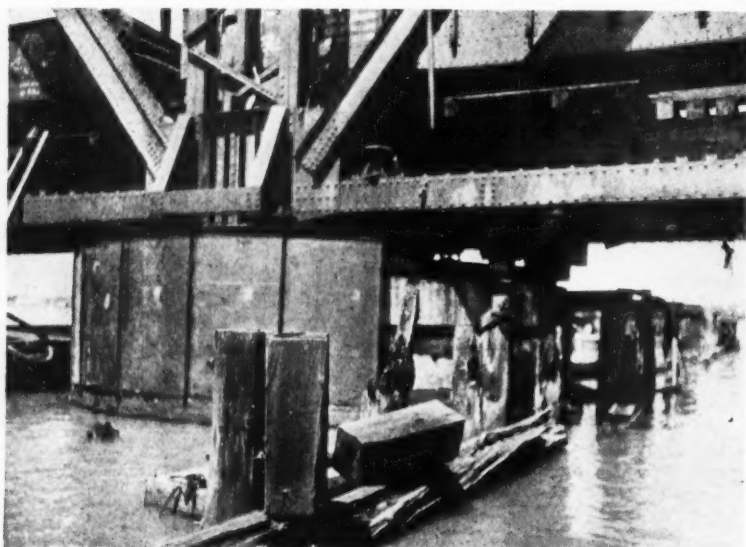
DRIVING POWER for Pacific Giant comes from SIO McKiernan-Terry hammer that follows pile down under the water surface. Steam boilers power hammer, as well as all hoisting equipment on the rig.



CONCRETE IS POURED into combined cofferdam-form to repair B&O swing-bridge pier near Baltimore. Bucket handled by locomotive crane empties into one of four plywood hoppers built into sides of span itself, and chutes carry the mix into the form.

Iron Girdle Holds Concrete for Bridge

Pier Repair



COFFERDAM IS ERECTED partly submerged because of lack of clearance between water and bridge's bottom chord. Unit is of wrought iron plates 8 ft high, and will be 26 ft 8 in. in diameter to leave 16-in. working space all around 24-ft dia pier.

AN OLD CENTER PIER of a railroad swing bridge got a new lease on life recently, when its deteriorated underwater portion was repaired inside a suspended cofferdam. Unwatered, this wrought iron cofferdam first served as a working chamber for removal of damaged concrete, then acted as a form to hold new concrete, and finally remained in place to give additional protection in the tidal zone.

The bridge was the B&O's span over Bear Creek, near Baltimore. The contractor was Masonry Resurfacing Co. The repair scheme was devised jointly by the railroad and contractor. Here's what they did to fix the 24-ft dia pier to a depth of 6 ft below mean low water, where deterioration ex-

tended from 12 to 48 in. back into the concrete all around:

First, a circular wrought iron cofferdam was fabricated, 8 ft in depth and 32 in. larger in diameter than the pier. Because heavy floating equipment could not be used, sections had to be small enough for erection by hand. Shell plates, for example, were only about 4 ft wide, meaning more joints and more points of possible leakage.

The hand erection itself was made more complicated because there was only 6-ft clearance between water level and swing-span bottom chord. And this was at mean low water, too. Accordingly, the cofferdam had to be erected partly submerged.

In addition, the cofferdam could not be suspended from the swing span because the latter had to be free to open for water traffic. The unit, therefore, had to be hung from the pier itself during erection.

Cofferdam Placed

When assembled around the pier, the cofferdam was lowered to final depth by chain falls and suspended by wire cables to dowels in the pier cap. It hung so that its bottom plate was about 30 in. below the lowest point of deterioration. There it was clamped in place, its bottom sealed to the pier with rubber gaskets.

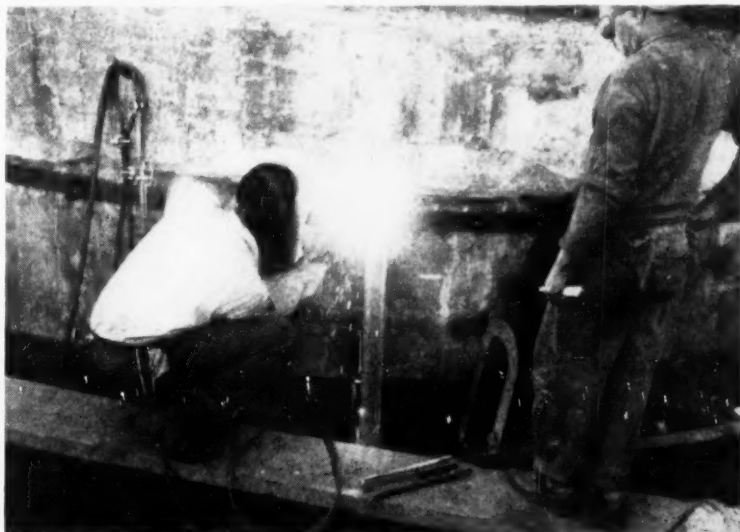
Trench jacks, extending from cofferdam bottom to the underside of pier-cap overhang, kept the unit from floating as it was dewatered. Later these were replaced by braces and angle brackets welded to steel bands clamped around the pier. They not only counteracted uplift but also were to support the cofferdam when it was filled with fresh concrete.

After cofferdam unwatering and calking of minor leaks, laborers entered and cut out all disintegrated concrete to a clean hard surface. Non-eroded areas against which new concrete had to bond were cleaned and scaled. After this, reinforcing dowels were placed in the areas of deepest deterioration, and a complete ring of reinforcing was set 6 in. from the cofferdam wall.

Concrete for the pier repair was a low-slump, 7.2-bag mix including Pozzolite and sufficient Durex AEA to entrain 4 to 6% air. It was delivered by transit-mix trucks to the railroad line at the shore of the creek, 800 ft away from the bridge. There the concrete was dumped into 1-yd buckets that were loaded



COFFERDAM IS ERECTED partly submerged because of lack of clearance between water so its bottom is 30 in. below lowest point of deterioration. Rubber seals make bottom watertight so cofferdam can be pumped out. Trench jack (left) prevents uplift.



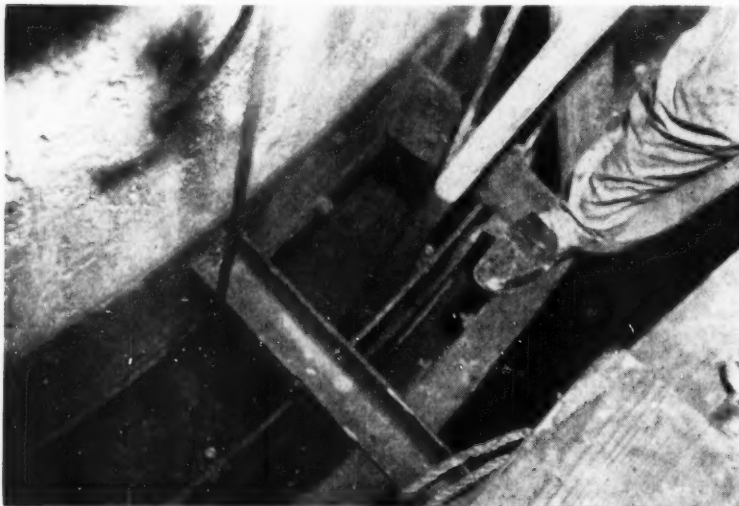
BRACES ARE WELDED to hold cofferdam-form firmly during final dewatering and concreting operations. They are attached to two metal bands encircling pier.



CONCRETE IS CHIPPED to remove all deteriorated material. Air for pneumatic tools is piped to pier from 365-cfm compressor on shore. Deteriorated portion extends back as much as 48 in. into pier.

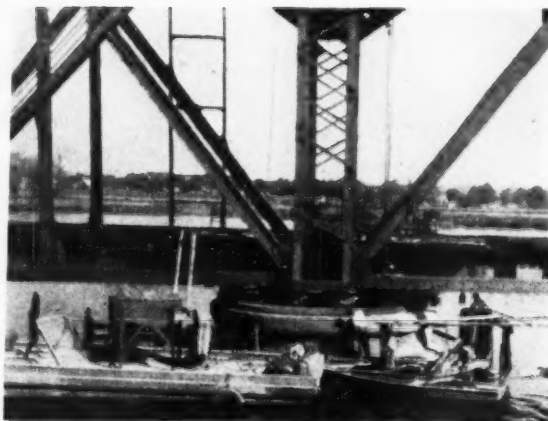


BUCKETS OF CONCRETE ARE LOADED by locomotive crane on to flat car for delivery to swing span 800 ft away. Originally, contractor proposed to run transit-mix trucks themselves on the car and haul them to pour site, but ready-mix supplier vetoed that idea.



MIX IS VIBRATED well to insure its filling cavities, which are reinforced with dowels. Complete reinforcing ring near face gives additional strength.

PIER TOP IS GUNITED after repairs to lower portion have been completed. Wrought iron form in which concrete for lower part was poured will remain in place to help protect pier.



on a flat car by locomotive crane. The crane pulled the car to the bridge and unloaded the buckets directly into plywood hoppers built into the side of the swing span. Inclined portable chutes carried the mix from the hoppers to all parts of the cofferdam form. This procedure allowed water traffic to pass while the locomotive crane was off the span, getting a new load of concrete.

After the concrete had cured for seven days, the cofferdam's supporting cable and brackets were removed. Chipping of deteriorated concrete on the upper section of the pier, and guniting of this area, completed pier restoration.

B&O Railroad personnel connected with the job were John T. Andrews, special engineer of maintenance; Gurney Dayett, Sr., then assistant engineer of bridges, who supervised the planning of the repairs; and C. R. Riley, then division engineer, who was responsible for construction. I. Leon Glassgold was in charge for the contractor, Baltimore's Masonry Resurfacing & Construction Co., Inc.

Grease it Right!

A BALL BEARING requires a relatively small amount of grease. Housings should be filled from one-quarter to one-half full. When installing new bearings, the mechanic should fill the bearing space (the sides of the bearing) with grease and only a little inside the housing.

The immediate effect of an excess of grease within a bearing is overheating due to churning of the lubricant. The grease tends to disintegrate and gradually becomes worthless as a lubricant—especially where the bearing operates at high speeds. A good rule is to add a small amount of grease at specific periods, watching for evidence of either too little or too much grease. Regular observation soon will make it possible to set up a greasing schedule.

It is a good idea to clean out old grease which may have become contaminated or may be deteriorating. It is best to remove the bearing, clean thoroughly with solvents and light oil, test for smooth rotation by turning with the fingers and repack with fresh grease. These practical suggestions come from the Anti-Friction Bearing Distributors Association.



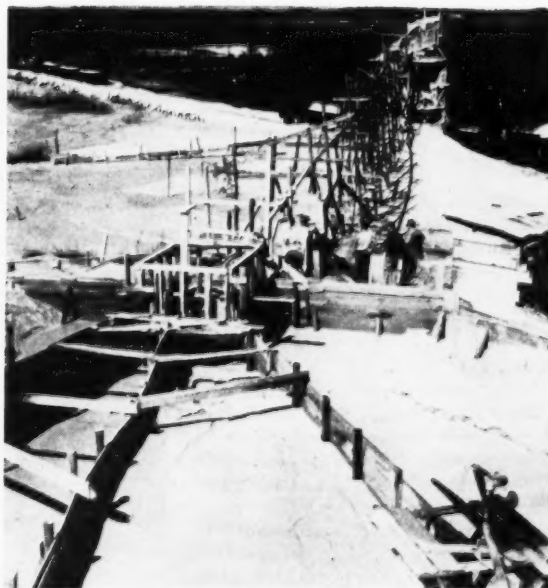
IN THE PIT. Water under high pressure from a monitor dislodges sand from the banks of an unusual sand pit near Junction City, Ga., operated by the Taylor Sand Co. Water is pumped from a lake 1/4 mi

away by an 8x10 Gardner-Denver pump powered with a General Motors diesel engine. Loosened sand is floated to a second pump for the next step, which is separation.

Pumps Produce, Classify and Load Sand



SAND IS PICKED UP as hydraulic action brings it out of pit by a 6-in. Pekor pump powered by GM diesel and forced 900 ft to a separator. Upper pipe shown carries pressure water supply from lake to the hydraulic monitor in the pit. Plant produces 200 tons per hr, with ten men running it. Work normally is on 8-hr basis; when necessary, plant operates around the clock.



GRADED SAND IN BINS is ready to be hosed and pumped another 200 ft to final washer, where it is loaded into rail cars in the background. Third and final pump operation is by a 6-in. Pekor sand pump and GM diesel. Water ultimately finds its way back into the lake again to start another cycle. Mining, grading, washing and loading are done entirely by three pumps.



CAT SLED TRAINS ...

WAY UP in the Canadian bush country of Northern Manitoba, some 500 mi north of Winnipeg, a 145-mi railroad is nearing completion across the muskeg, lakes and rock outcrops of the vast Cambrian Shield. Of course, conventional shovels, draglines, trucks, scrapers and bulldozers built the grade.

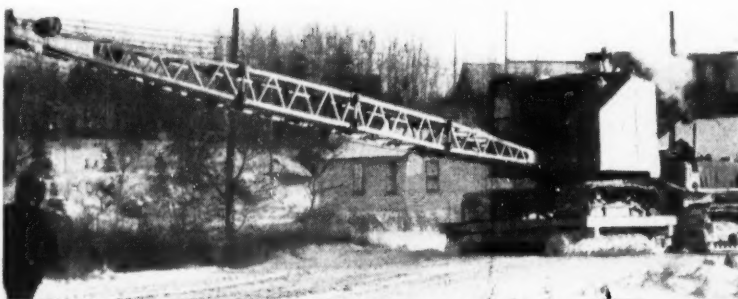
But behind them, and making the project possible, was an array of Caterpillar tractor sled trains that distributed equipment, camps, fuel oil and supplies along the line over the frozen tundra. A fleet of light float planes served otherwise isolated camps during the summer working season with men, parts and more supplies.

Construction of the project, handled by C. A. Pitts General Contractor, Ltd., of Toronto, was comparatively simple. The big problems arose from difficult access to an isolated area in the formidable bush country, and the exacting detail of advance planning necessary by the contractor. Any slip-up in advance planning for winter freighting would have meant trouble on the job the following summer.

Some 20 years ago the Canadian National Railway took off from Cranberry Lake on its line between The Pas and Flin Fon with a branch to Sherridon, 90 mi north of The Pas. Here the Sherritt Gordon Mines, Ltd., was developing a

Build Railroad Through

By HAROLD W. RICHARDSON, Editor



Tractor Sled Trains haul equipment and supplies

Top: Northwest 6 dragline on log skids takes off from abandoned town of Sherridon to be spotted somewhere along proposed rail line in north Canada bush. Bottom: Load of piles and leads on tandem sled, pulled by Cat D6 tractor, leaves Sherridon for trip north. Trestles were driven in winter with drop hammers, ahead of summer grading operations.



...LIGHT FLOAT PLANES...

North Canadian Bush



out on line for following summer construction

Top: Fuel and gas, 1,800,000 gal had to be stockpiled along route each winter. Here train of tanks crosses frozen lake on way to a temporary tank farm. Bottom: Some buildings were moved intact; others were knocked down in panels for long sled ride to summer camp locations. Fly camps, moved as needed, served scattered winter rock and bridge crews.

new copper mining venture and built a new town in the wilderness to serve it. Now the mines at Sherridon have petered out, and the company moved the town—at least everything that could be loaded on sleds—over the winter ice during the last three years to Lynn Lake, 145 mi north, to open up a new mining development.

The move was made with assurance that the Canadian National would extend its line from The Pas to Sherridon on to Lynn Lake. This is the railroad Pitts has been building for the last two years. It runs roughly between latitudes 55 and 57, parallel to and not far east of the Saskatchewan-Manitoba border. Actually, it lies farther north than the railroad now being built into the Labrador iron ore area far to the east.

A contract for grading and drainage structures, except for superstructure for three Churchill River crossings, was let to Pitts in August 1951 for \$8,250,000. Completion was set for October 15, 1953. The railroad laid all track and ballast with its own forces. Dominion Bridge Co. erected the Churchill River Bridges—two 200-ft and one 150-ft truss spans—on abutments built by Pitts.

Project quantities include 600,000 cu yd of rock, largely concentrated toward the south end; 2,500,000 cu yd of unclassified grading, including muskeg, clay,



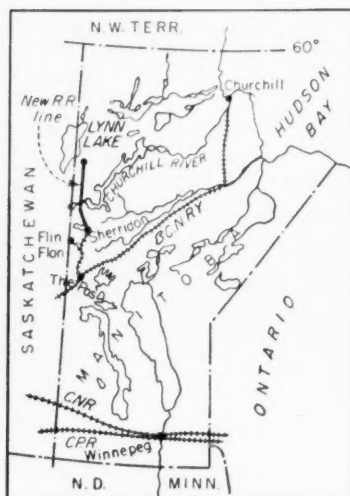
WINTER HAULING OF FUEL OIL AND GAS was handled mainly by fleet of Linn half-trucks. Each truck mounted two tanks, hauled sled with two more tank loads.



FLOTILLA OF LIGHT FLOAT PLANES, such as this DeHavilland Beaver, kept job going through short summer construction seasons, hauling men, materials, parts and supplies from base to camps, from camp to camp. In winter they were on skis for liaison and contact with winter crews.



DURING SPRING and fall break-ups neither float nor ski planes could operate, so two Bell helicopters carried key personnel and emergency parts and supplies over the line. They were also used in summer of 1952 to supplement float plane service.



NEW RAILROAD in Northern Manitoba takes off from end of old line at Sherridon, 500 mi north of Winnipeg, and crosses 145 mi of Canadian bush land to new mining property at Lynn Lake. There are no highways beyond Flin Flon.

boulders, sand and gravel; 54 timber trestles, and 25,000 lin ft of timber box and corrugated iron culverts.

Pitts planned the job in two sections, figuring on getting to M. P. 54 by the end of the 1952 construction season, and completing the project into Lynn Lake the following ('53) season. The three main river bridges are at M. P. 54—one place where the myriad-branch Churchill converges into only three channels in its lake-to-lake meandering eastward across Manitoba to Hudson Bay.

The first six miles—practically all rock—were accessible from Sherridon. From there on, an unorthodox construction procedure had to be set up. Not any of the remainder of the line could be reached by an overland route during the short construction season because of the muskeg.

Nor, despite the multitude of lakes dotting the region, was there any connected waterway along the route. Therefore, the only practical procedure was to establish a string of camps along the line, complete with buildings, supplies, fuel, and equipment by sled-freighting over ice and frozen ground.

Six such camps were set up that first winter, 1951-'52, between M. P. 0 and M. P. 80. Crews working out of these camps completed the grade during the summer of '52 to M. P. 54, and the Churchill River bridges also were finished. By the
(Continued on page 67)

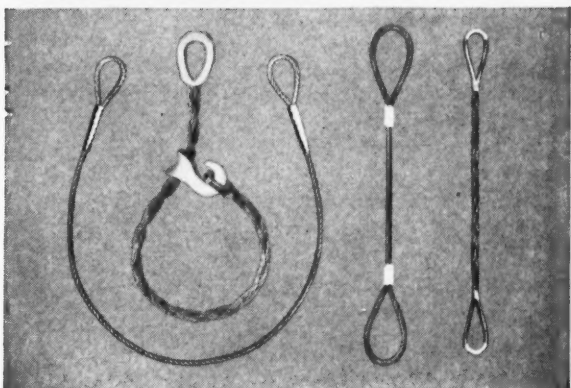


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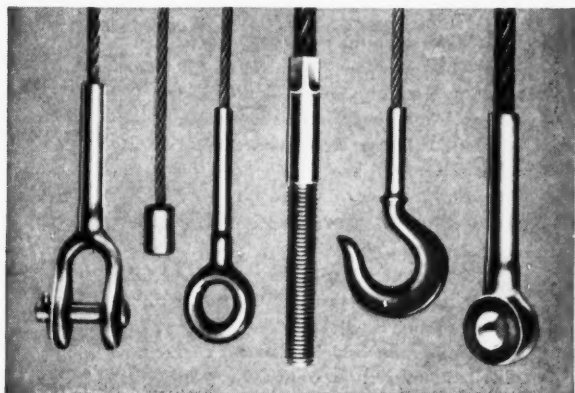


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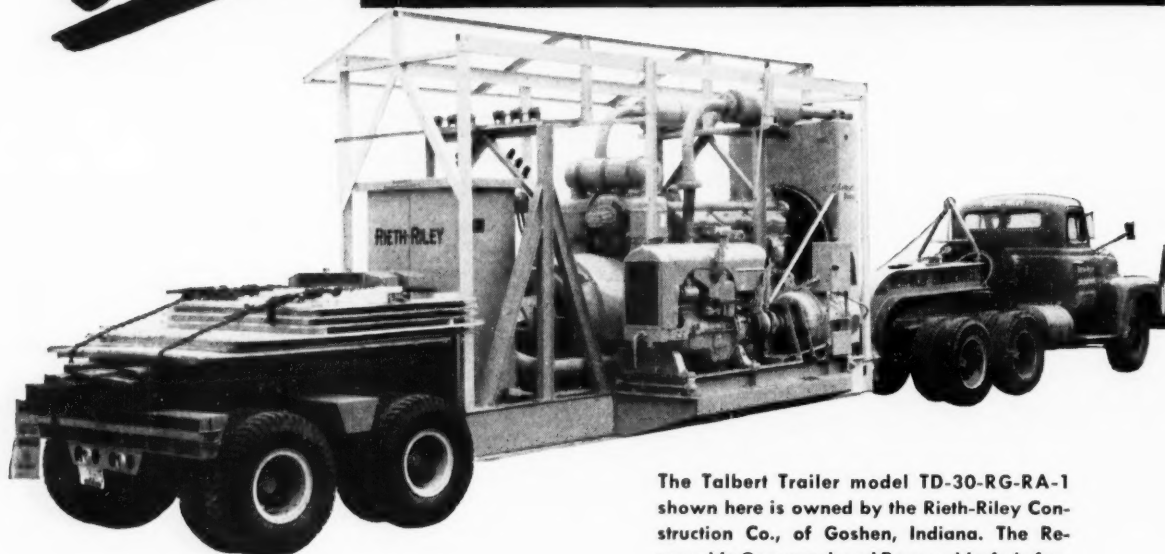
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OF TALBERT'S EASY CONVERSION FOR SPECIALIZED HAULING



The Talbert Trailer model TD-30-RG-RA-1 shown here is owned by the Rieth-Riley Construction Co., of Goshen, Indiana. The Removable Gooseneck and Removable Axle features of this Talbert Trailer make it particularly adaptable to the specific needs of the Rieth-Riley Construction Co.



Write for new
Talbert Catalog No. 104

The trailer can be used to transport the portable power unit shown here. This unit originally constructed on a skid base has been converted to take the removable gooseneck and removable axle units of the trailer.

The unit can be used with a standard deck for transporting bulldozers, cranes, asphalt finishing machines, graders and other miscellaneous contractor's equipment.

The trailer also can be used with a beam deck for hauling heavy cranes. After easy front-end loading, the crawler side frames can be easily removed to bring the load within legal weight limits.



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY



CAMPS WERE SPOTTED in advance at points where proposed line skirts lake large enough for float plane operation. Here is a typical camp layout, at M. P. 112, made up of ample bunk houses, good mess hall, parts depot, and radio shack and office combined.



TANK FARMS to store 1,800,000 gal fuel oil and gas were spotted near camps. Individual tanks (left), 3,500 and 8,500-gal capacity, were bolted type, supplied by Parkersburg Rig and Reel Co. Also, 100 welded tanks, of 1,000-gal capacity each, were scattered throughout tank farms.



fall freeze-up, the railroad had completed the track across the Churchill River.

A yard at the Churchill became base of operations for sled freighting last winter. Six new camps were set up between M. P. 80 and Lynn Lake. Again, equipment, fuel and supplies were strung out along the line for final grading operations this last summer.

Planning Most Important

Thus, from the procedure followed, it is apparent that advance planning for the winter freighting was the biggest problem. First, of course, was the question of equipment. When the contract was let, the line had not been finally located nor profiled. The exact quantities, and the amount of rock were not definitely known. But, with an early estimate of 600,000 cu yd of rock, the contractor had to set up mainly for a rock job.

Pitts brought in 2 million dollars worth of new equipment, well standardized to reduce the parts problem in the wilderness. Also, it was diversified enough to tackle any kind of ground encountered. A list of major equipment used this



EQUIPMENT REPAIR FACILITIES, mighty important in these isolated areas far from source of supplies, varied considerably from camp to camp, but all were well stocked with parts, valued in total at more than \$300,000. At top is a pole and canvas shop and a prefab parts depot. An all-canvas shop (center) adequately serves one camp. Heavy repairs, such as being made on this Cat D6 (bottom) were often made right out in the open.

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Thermoid Company
Industrial Friction Materials Division
Trenton, N. J.

RAILROAD NORTH ...

Continued from page 67

last summer appears in an accompanying table. A few items were added to the original plant established at start of job.

But after the equipment was selected, there remained an even bigger question: just where and how to distribute it? No second guessing was possible, for once an item was put into a particular camp, there was no chance to shift it when grading started after the spring break-up. Camps, too, had to be set up to accommodate the expected number of workmen at each location. The same detailed planning was necessary for camp supplies, spare parts and fuel. More than \$300,000 worth of spare parts were scattered along the line each year.

The winter freighting procedure was the same for each year, first from Sherridon, then out of M. P. 54, so the following description is typical of each winter's operation. Site for each of the six camps was selected alongside a lake suitable for float-plane landings the following summer.

Heavy Freight

Detail sheets listing every conceivable item needed were made up for each camp. Then these items were checked against a master sheet for further accuracy. Because of the high cost of flying materials and supplies brought in later, everything possible was put on the winter freighting list. The freight bill was about \$325,000 each year, indicative of the scope of operations.

The freight list ranged from 2½-yd shovels, 14-yd scrapers, D8 tractors, panels and prefab sections for camp buildings, down through parts, gas and fuel oil (1,800,000 gal) dynamite, canned goods and food staples and roofing nails. Steel and cement for the Churchill River bridges were hauled out that first winter. Piles and timbers for trestles, and lumber and pipe for culverts were dropped off at proposed point of use.

Linn half-tracks proved to be the best rigs for hauling fuel oil and gas. Each truck mounted two tanks and hauled a sled with two more tanks. These petroleum products were stockpiled at each camp in bolted oilfield tanks of 8,500 and 3,500-gal capacity and also in 100 1,000-gal welded tanks.

(Continued on page 70)



MANHANDLING THE KAW RIVER

People of Kansas City, Kan., know the rebellious Kaw River doesn't tame easily. They saw it run roughshod over the old levee in 1951. They intend to see it doesn't happen again.

But it takes tough, durable equipment to contain the Kaw. That's why a burly Caterpillar No. 12 Motor Grader is working the tough, sticky soil on the new levee.

Explains M. C. Green, general superintendent of Storms & Frew Construction Co., Kansas City, Mo., which is building the levee:

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done. The blade stays where he puts it! No creeping of controls or unwanted blade shifting.

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**NAME THE DATE...
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Typical Grading Operations...



BEAUTIFUL SAND LIKE THIS was all too scarce. It was not only a snap for this Northwest 6 shovel and Koehring Dumptor combination, but was also fine for topping out the grade.



MOST NORTHWEST RIGS were fitted with draglines as the best all-around earthmover for sidecasting or loading. This machine is loading boulder-studded clay into GMC trucks.



NORTHWEST DRAGLINE loads Linn half-track at off-line borrow pit. This is small spread—dragline and three half-tracks, but worked well in areas where necessary to scratch around shallow pits to find sufficient borrow. Note extra fuel tanks on top of crane cab.



LINN HALF-TRACKS end-dump across soft ground stretch, then small dozer spreads fill ahead. Here is good example of muskeg

Everything else was hauled out by tractor sled trains pulled by Caterpillar D6s. Trains traveled in groups of 3 or 4 for mutual assistance. Each consisted of the lead tractor and 3 to 5 sled loads, plus a heated caboose where the crews ate and slept. Once a fleet of trains got rolling, they kept going day and night until they had returned to base for more loads.

Canned goods and other food staples were hauled in the heated cabooses. Upon reaching a proposed camp site, a building was hurriedly thrown up, an oil stove installed, and a man was designated to stay

there the rest of the winter to keep the unloaded foodstuffs from freezing.

Companion to the winter freighting were the summer flying operations that kept the job rolling after spring break-up. Pitts put three company-owned float planes on the project—a Fairchild Husky, a De Havilland Beaver, and a Cessna 170. During the winters these planes were fitted with skis for reconnaissance and liaison work. Two additional float planes were chartered to assist in summer freighting. During the 3- to 6-week period each fall and spring when neither

floats nor skis could be used, key personnel flew the line in helicopters.

This flying set-up was the best organized we ever saw on a construction job. All planes and their operations were under the supervision of an air transport manager stationed at Sherridon—and his word was final. There was no flying after dark. Planes caught away from base by darkness had to sit down at the nearest camp. No flying in bad weather or high winds, either. Every plane carried emergency rations. Pilots were in frequent touch with home base by



IN MANY SOFT-GROUND AREAS it was expedient to leave the surface moss undisturbed and place fill on top by end dumping and bulldozing. Once fill was started, it would support heavy equip-

ment, such as this D8 bulldozer. Fill for grade shown at left was placed by this D8 tractor and A-C scraper combination, found best for haul from off-line borrow pits in flat stretches.



pushed aside in foreground, but moss mat stiffens up in background sufficient to support equipment on shallow fill.



SOMETIMES IT IS POSSIBLE to side-cast side borrow material directly into base of fill, as was the case here, with draglines. Embankment will be built up from cut behind camera. Right-of-way was cleared 100 ft wide.

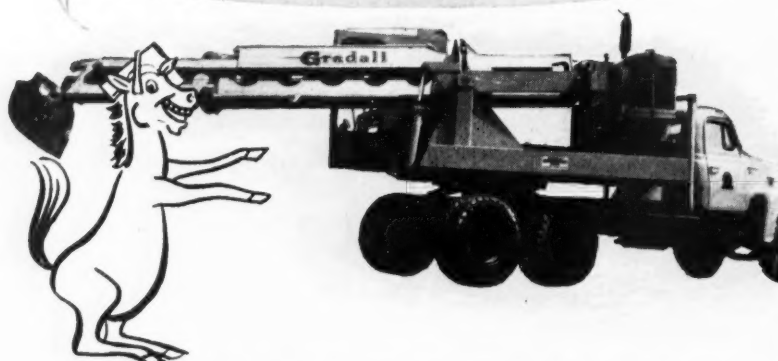
radio, reporting leaving time and destination at each take-off, and reporting in upon arrival. Dispatching of all loads, including personnel, was by the air manager's office.

Every plane was checked regularly at 30 and 50 hr, and over-haul schedules were rigidly observed.
(Continued on page 72)

→
END DUMPING was most prevalent method of building grade across soft ground, with a Cat D8 bulldozer pushing the fill ahead. This sand-gravel-boulder mixture was a relief from sticky muck found many places.



Let's Talk Horse Sense about Horsepower



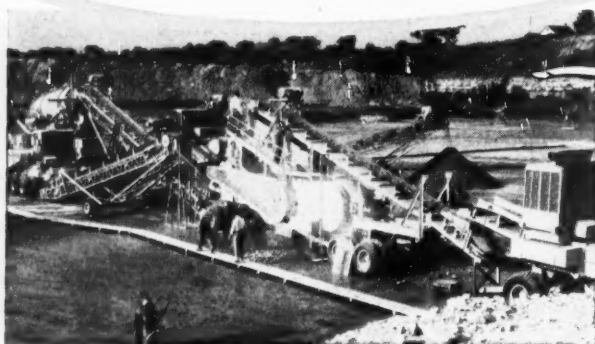
IT TAKES MORE THAN HORSEPOWER TO GIVE YOU PRODUCTION POWER

To handle rated load capacity for long and extended periods takes more than horsepower. It takes high torque developed at moderate speeds by a heavy-duty industrial engine. Minneapolis-

Moline industrial engines are especially designed and built to stand continuous heavy load operation because they develop *more torque at normal operating speeds.*



HEAVY DUTY POWER
means **HIGH-TURBULENCE COMBUSTION**
plus **EXTRA HEAVY CONSTRUCTION**



Compare the extra weight and extra strength of MM Engines. Note the large, sturdy crankshaft with its husky cheeks and throws . . . the larger bearings which reduce combustion pressures . . . the extra crankcase depth below the center line of the crankshaft. Examine all these factors in terms of overall performance and longer engine life, and you'll

see there's real horse sense in every part of MM heavy-duty design.

Let's talk horse sense about value, too. MM puts heavy-duty horsepower on the high production line to give you dependable, long-lasting engines for less.

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MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA

RAILROAD NORTH . . .

Continued from page 71

served. These planes, remember, were the only access to the project during the summer working seasons. They shuttled back and forth constantly during the long daylight hours of the Northland, from base to camp, from camp to camp. They hauled men, fresh vegetables and meat, parts and supplies. They sparked the job and kept it rolling. They made grading operations possible in the wilderness.

Communications were excellent throughout. Besides the radio hook-up between planes and base, each camp was equipped with radio for contact with headquarters, with other camps, with certain vehicles out on line, and with the planes. Then, too, a telephone line was strung between Sherridon and the rail yard at the Churchill, keeping pace with tracklaying.

Actual construction operations took second place to the problems of access and distribution. They were relatively simple, except for difficulties imposed by excessive rains during the summer of 1952 when the grading gangs were stretched out across slippery clay ground.

Winter Work

Quite a bit of work was carried on during the winter. For several miles north of Sherridon the grading was all rock, permitting cold-weather operations. Also, hauled back and forth on sleds, piledriving rigs drove the trestles through frozen ground and ice. Drop hammers eliminated the necessity of boilers. Isolated rock cuts could also be handled during the winters.

Rock was drilled with jackhammers, except for larger cuts where wagon drills were worthwhile, loaded by shovel and hauled to grade by Dumpsters. But muskeg and permafrost were much more trouble than rock. When the muck wasn't too deep, under 6 ft or so, it was bladed or cast to the side. In deeper bogs the top mat was left undisturbed, and fill was placed by end-dumping until a stable embankment was obtained.

Permafrost, which lies throughout the area from 18 in. to 6 ft under the surface, caused trouble only in cuts and borrow pits. Under embankments, it was left strictly alone as a solid foundation. In cuts, unfrozen soil was removed, then the frozen ground was allowed to thaw until another slice

(Continued on page 74)

**SPREAD HARSH
DRY CONCRETE
FAST**

BLAW-KNOX CONCRETE PAVING SPREADERS

with the Automatic Transverse Blade

MODERN harsh, dry mixes of 1½" to 3" slump concrete are extremely difficult to spread manually or by makeshift methods with speed and economy. That's why Blaw-Knox Spreaders have become standard equipment in so many high-speed paving operations. This Spreader with the Transverse Blade is the *only* spreader that automatically moves the concrete longitudinally and transversely at the same time, spreading it uniformly to the width and elevation required, no matter where it is placed on the subgrade.

A Vibratory Attachment may be added to compact the concrete simultaneously with the spreading operation, increasing its density and strength and insuring dense pavement edges, free from honeycomb. Blaw-Knox Spreaders easily keep pace with the output of two 34-E pavers.

Available in two standard adjustable widths—10' to 15' and 20' to 25'.

**ASSURE A
SMOOTH-RIDING
FINISH**

BLAW-KNOX FINISHING MACHINES

This double-screed pavement finisher assures high daily production and a smooth-riding finish regardless of the type of concrete mix used. Its rigid and sturdy structural frame is combined with proper weight distribution to minimize weaving and lateral thrust on the side forms, even when operating on concrete that is dry, harsh and difficult to manipulate. The large, wide front and rear screed ends prevent wastage of concrete over the side forms. Both standard sizes—10' to 15' and 20' to 25'—are easily and quickly adjustable for width. Screeds are telescopic.

Blaw-Knox Finishing Machines are available with a Vibratory Attachment for consolidating and compacting difficult mixes of concrete, assuring a smooth finish while maintaining maximum production schedules.

**MECHANIZE THE
ENTIRE JOB
FOR...**

HIGH-SPEED, LOW-COST CONCRETE PAVING CONSTRUCTION

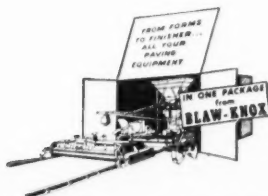
USE THE BLAW-KNOX "Complete Package"

of concrete paving equipment

It includes: Clamshell Buckets • Aggregate and Cement Batching Plants • Steel Road Forms • MultiFoote Concrete Pavers • Precision Subgraders • Concrete Paving Spreaders • Finishing Machines

Mechanization is the key to greater efficiency and economy in modern concrete paving operations. And the key that opens the door to greater profit on *your* job is 100% mechanization with the Blaw-Knox "Complete Package" of concrete construction equipment, developed to bring unified, balanced, "assembly-line" methods to road building operations. The Blaw-Knox "Complete Package" of cost-cutting equipment contains every piece of equipment you need, from forms to finisher, to give you the step-by-step mechanization that assures high-speed, low-cost concrete paving construction.

Blaw-Knox is your *only* source for a completely mechanized outfit... a one-responsibility "package" available on one order, in one shipment and with only one financial arrangement. One responsible distributor organization simplifies maintenance and supply of genuine factory replacement parts. One Blaw-Knox trained man can service *all* your "package" equipment. Start mechanizing your paving outfit today to get your share of the big jobs. See your nearest Blaw-Knox distributor for complete details.



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ROCK PREDOMINATED the grading at the south end, then ravelled out into troublesome outcrops over remainder of route. Left: North-

west shovel tackles heavy rock cut north of Sherridon. Center: Typical rock crew cut on line used Ingersoll-Rand Jackhammers, powered



TO TRANSPORT CONCRETE across roaring forks of Churchill River for bridge abutments, Pitts rigged up this high line and bucket system, powered by a Hystaway crane.



DOMINION BRIDGE CO. erected the Churchill spans with high lines by the tie-back method, as it was impossible to place falsework in the swift-running streams.

Major Equipment Items

- 4 Northwest 25 shovel-draglines, $\frac{3}{4}$ -yd
- 6 Northwest 6 shovel-draglines, $1\frac{1}{2}$ -yd
- 1 Northwest 80D shovel-draglines, $2\frac{1}{2}$ -yd
- 2 Insley draglines, $\frac{1}{2}$ -yd
- 12 Caterpillar D8 bulldozers
- 1 Caterpillar D8, with Hystaway boom
- 3 Caterpillar D7 bulldozers
- 3 Caterpillar D6 bulldozers
- 1 Caterpillar D4 bulldozer
- 3 Allis-Chalmers HD5G front-end loaders, 1-yd
- 1 Allis-Chalmers HD9G front-end loaders, 2-yd
- 6 International TD18 tractors
- 1 International TD14 tractor
- 2 Caterpillar 112 graders
- 6 Allis-Chalmers scrapers, 14-yd
- 1 Allis-Chalmers scraper, 8-yd
- 4 LeTourneau scrapers, 8-yd
- 24 Koehring Dumpsters, 6-yd
- 4 Linn half tracks
- 24 GMC dump trucks, 4-ton
- 6 GMC service trucks, 3-ton
- 4 GMC power wagons
- 2 GMC pickups, $\frac{1}{2}$ -ton
- 7 Willys Jeeps
- 4 Snow mobiles
- 5 Gardner-Denver portable compressors, 500-ft
- 5 Gardner-Denver portable compressors, 365-ft
- 3 Gardner-Denver portable compressors, 210-ft
- 1 Ingersoll-Rand Quarrymaster
- 32 Ingersoll-Rand J50 jackhammers
- 7 Ingersoll-Rand X72 wagon drills
- 1 Rex concrete mixer, $\frac{1}{2}$ -yd
- 2 Dominion shovels, 1-yd*
- 2 Dominion shovels, 2-yd*

* Borrowed from C.N.R.



by Gardner-Denver 500-ft portable, and Liddicoat throw-away bits to drill out glacier-rounded rock dome. Right: Koehring Dumptor



builds rock grade over frozen ground in winter operations; permafrost is close to surface, fill will settle little when top thaws.



TRESTLES like this one, 54 of them, were driven in winter to be ready for summer grading. Here a Northwest dragline has come down over partly finished grade to build up approaches by side-casting.

could be taken out. This meant equipment had to be moved in and out several times in deep cuts and pits.

The total labor force ran about 350 men. Wages ranged from \$1.00 for laborers up to \$1.85 for operators, considered competitive in that market. In summer some operations were double-shifted, others ran long, long shifts. Daylight up there lasts up to 18 hr. during the three summer months. Men were charged \$1.75 per day for board and room, just about half the cost to the contractor.

Clearing, amounting to 1,900 acres, was subcontracted to Forsberg & Co., Winnipeg. This was all hand work with local Indians
(Continued on page 78)



CONTRACTOR'S kingpins who sparked the fast job from start to finish, lined up behind a Snowmobile scout car. From left to right: Charlie McKnight, project manager; Sydney C. Cooper, chief engineer for C. A. Pitts Contractor, Ltd.; George Rutledge, general superintendent; and Chas. A. Pitts himself.



Houston Contracting Company of Houston, Texas, uses Shell Rotella Oil on Caterpillar Diesel D8 tractors. The photograph shows work on the McCamey-Houston, Texas, pipeline extension

FROM COAST TO COAST, operators of heavy-duty construction equipment report sizeable reductions in engine-parts wear with Shell Rotella Oil. That's because the balanced alkaline fortification in Shell Rotella Oil fights one of the chief causes of excessive engine wear—cylinder and bearing wear caused by acidic products which result, for example, from incomplete combustion.

Excessive wear on heavily loaded bearings is cut down by Shell Rotella Oil's tougher lubricating film. Its effective detergent-dispersant action prevents harmful deposits.



Write for latest technical information. See how Shell Rotella Oil can help reduce your engine maintenance costs.

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Whiteman Power Buggies roll right under truck-mixer chute to receive their loads.



Concrete is poured directly into Power Buggies which handle capacity loads every trip.



Power Buggies speed over portable timber ramps at 16 mph, never get tired.



Concrete is poured quickly, accurately with dumping mechanism under positive control at all times.

Whiteman

POWER BUGGIES

set a YARD-A-MINUTE PACE...

... ON BIG NEW YORK PIER JOB

Pouring the 100,000 sq. ft. concrete deck of New York City's Pier 57 was done in record time with four Whiteman Power Buggies. The mixer trucks rolled right up to the edge of the pier and chuted the concrete directly into the Power Buggies which sped across portable timber runways at 16 mph to pour their loads quickly and accurately. Finishing operations were handled by Whiteman Floating-Finishing Machines.

According to the contractors, "complete mechanization of concrete pouring and finishing greatly expedited the job and held costs to a minimum." Whiteman equipment can save time and money for you, too. Send coupon now for details.

*Merritt-Chapman & Scott Corp. and Corbette Construction Co., joint-venture contractors. Whiteman equipment furnished by Contractors Supply Corp.

Whiteman



FLOATING & FINISHING MACHINES



SCREEDING MACHINES

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Please send prices, literature and name of distributor for ☐ Screeding Machines.
☐ Power Buggy ☐ Floating Finishing Machines.

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Firm _____
Address _____
City _____ Zone _____ State _____

THE LEADER IN CONCRETE EQUIPMENT



BEHIND THE GRADING CREWS comes this track-laying juggernaut, owned and operated by the Canadian National Railway. Ties roll down the side conveyor, rail is snaked out on the monorail hoist. Untreated ties, 60-lb relay rail, and a twisting line full of sharp

curves won't put this new railroad in the streamliner class, but after all, it will only haul ore out of the wilderness. The railroad is laying all track and ballast with own forces.—Canadian National Ry. Photo

as laborers. Part of the winter hauling was sublet to Patricia Transportation Co., Ltd., Winnipeg. Dominion Bridge Co. erected the Churchill River bridges and the Canadian National laid the track. Crawley & McCracken, Montreal, ran the camps.

For the Canadian National Railway, Major J. L. Charles, Chief Engineer, Western Region, was in top charge, with R. W. Ross as resident construction engineer.

C. A. Pitts Contractors, Ltd., Toronto, sponsored the project as a joint venture with Savin Construction Corp., The Arthur A. Johnson Corp.; Johnson, Drake & Piper International Corp.; and B. Perini & Sons, Inc., all from the United States. Charles A. Pitts, president of the sponsoring firm, and Sydney Cooper, Pitts' chief engineer, kept close track of the job for the contractors. Charlie

McKnight was project manager, assisted by George Rutledge as general superintendent. Other key contractor personnel included: V. Winters, master mechanic; L.

McLean, project engineer; J. Beauchair, N. O'Brien, Pete Johnson and W. O'Dell, grading superintendents; W. I. Moore, office manager; and R. Birkett, air-base manager.

Donald C. McGraw New President of McGraw-Hill

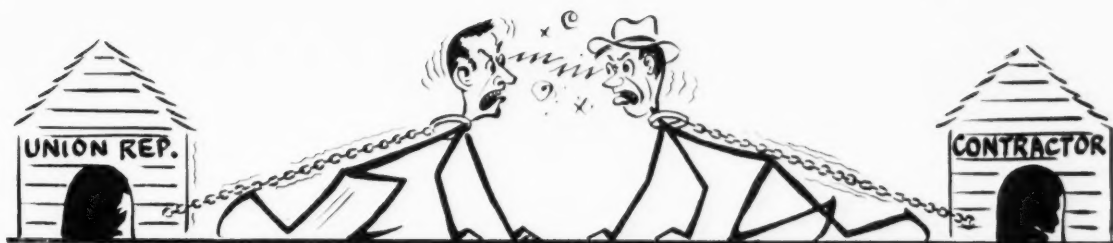
DONALD C. MCGRAW was elected president of the McGraw-Hill Publishing Co., Inc., to succeed his brother, Curtis W. McGraw, who died September 10 (see page 49).

Mr. McGraw, youngest son of the late James H. McGraw, Sr., founder, has been associated with the company since 1919. He has been a director since 1935 and vice-president since 1945. During the war he was a consultant to the Publishing and Printing Division of the War Publication Board. During World

War I he served with the U. S. Navy.

He has been vice-president for Manufacturing and General Services; also a director of the McGraw-Hill Book Co. and of the Newton Falls Paper Mill in which McGraw-Hill has a half-interest. Mr. McGraw attended Lawrenceville School and Princeton University and lives in New Jersey.

Other officers of the McGraw-Hill Publishing Co. remain unchanged.



BITTER FEUDS and fights between contractors and unions do not get the work done, bring on losses, may cause strikes.

How to Improve Contractor-Labor Relations

Part 1...What the Contractor Can Do

Good relationships come through definite labor policies and right attitudes—based on a knowledge of procedures, personal contacts and pre-job planning.

By LEON B. KROMER, Jr.

THE PRIMARY FUNCTION of a general construction superintendent is the over-all supervision of a job, with the objective of completing the project in accordance with plans and specifications within the time allotted. Conditions may require that he spend from 30% to 50% of his time handling labor problems that arise on the job.

The amount of time so spent (time lost to job supervision) depends to a great extent on the type and complexity of the project. For example, many more problems will develop on the construction of a paper mill with all the intricate machinery and equipment that must be installed than on the building of a housing project. How well the general superintendent copes with situations depends in large measure upon you, the contractor; your attitude toward organized labor, your support and understanding of the general superintendent's problems, your appreciation of some of the problems of the unions with which he deals and whether you have developed pre-job planning.

Superintendents usually reflect their employers in their attitude toward unions. What is your attitude toward the building trades unions? Are you antagonistic to the whole concept of organized labor or do you accept it as an integral part of our business scene? Remember, building trades unions were among the first successfully

organized in the labor movement. Like atomic energy, they are here to stay and it's up to management to deal with them constructively. Here are some do's and don'ts that may help you improve labor relations on your jobs—which also means improving the chances of building at a profit.

- **Do work toward a good relationship** through personal contact with your local union leaders. While conflicts can and often do develop, it is much easier to resolve them when mutual trust and understanding have been built up. Many times strikes have been averted when the contractor and union leaders involved in the dispute are on a first



TOO CHUMMY an atmosphere can be bad, too. Keep relations on a friendly business basis.

name basis and earnestly endeavor to work out a fair solution.

Most contractors' associations aim at promoting stabilized labor conditions in their locality. How effectively this is carried out depends upon the membership. Some of these groups may have a small membership but bulk large in accomplishment. Others are torn by internal friction.

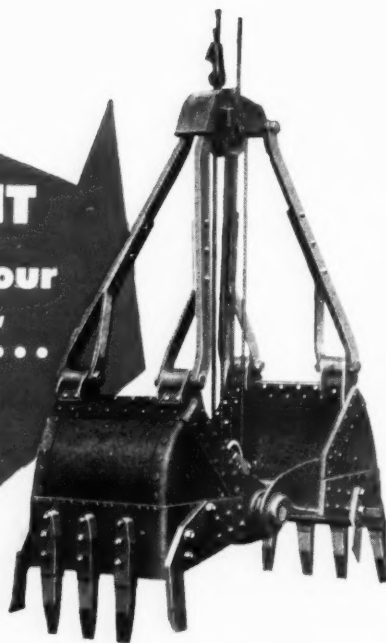
If you, as a contractor, do not already belong, investigate the association in your community or the one nearest you. Determine whether membership might prove beneficial to you and at the same time enable you to contribute to the effectiveness of such an organization.

As a member, participate as fully as possible in its activities. Serve on the labor committee when possible. This will keep you up-to-date on labor developments in your area, frequently making it possible to anticipate wage increases, disputes or problems that may de-

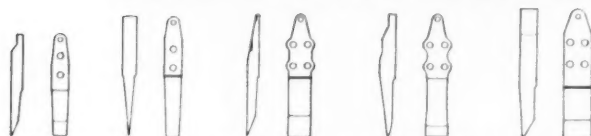
CONTRACTORS AND WORKMEN alike lose millions of dollars annually due to disputes on construction jobs. Most of these losses can be prevented by a cooperative approach and a willingness to understand the other fellow's viewpoint. In addition, basic labor laws and regulations must be understood and followed.

Part 1 of this three-article series gives valuable suggestions to contractors. Part 2 will present suggestions from and for labor leaders to get a smoother working arrangement. Part 3 will describe what the job superintendent (the man in the middle) can do to keep his project moving and spend less time handling labor problems.—THE EDITOR

**"PUT RIGHT
TEETH in your
DIGGING"...**



for Added Efficiency!



Types of Standard Teeth for Various Conventional Operations



Corner teeth



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Special Teeth

A bucket of recognized ability becomes a greatly improved "digger" when equipped with teeth of proper type and design.

Owen Buckets are designed to utilize the weight of the bucket to force the teeth into the material when dropped contributing to their reputation as exceptionally efficient digging buckets.

Owen teeth are designed especially for "deep penetration"—teeth that "grasp and hold"—teeth for "breaking down resistance at corners" to aid shell penetration—side teeth "to cut wall clearance" in trench excavation, etc.



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velop. You are then better equipped to prevent their arising on your jobs or to handle them if they cannot be avoided.

For example, assume that during contract negotiations the union committee bargains on the basis of a 25c hourly increase. Discussions between the union group and the contractors' committee make it evident that the final settlement will be around 12½c. Even before termination of negotiations you can protect yourself (because you are a participant) by setting up a contingency for increased labor costs when bidding lump sum contracts.

• **Do educate your superintendents** to handle job labor relations. If possible, get them all together at your main office at least once a year. This may be feasible during the slack construction season. Plan round-table discussions on job labor problems for both psychological and educational value. Superintendents, being close to their own jobs, tend to see only their own problems. It will be an eye-opener and provide a big psychological lift to hear of similar or more difficult problems faced by other superintendents. Younger superintendents can learn from the older, more experienced men how they handle specific labor disputes.

During such sessions educate your superintendents on procedures to follow when confronted with a jurisdictional dispute. Do they know of the National Joint Board for the Settlement of Jurisdictional Disputes? This board determines work assignments in jurisdictional cases referred to it either by one of the unions involved in the dispute or a contractor who is threatened with a jurisdictional strike.

Contractors who have not already done so should place themselves on record by forwarding to the Board's Chairman at 901 Massachusetts Ave., N. W., Washington, D. C., a stipulation that they will follow (1) present agreements and decisions of record on work assignments and (2) jurisdictional decisions of the Board. This procedure will assure them of the Board's assistance when it is needed.

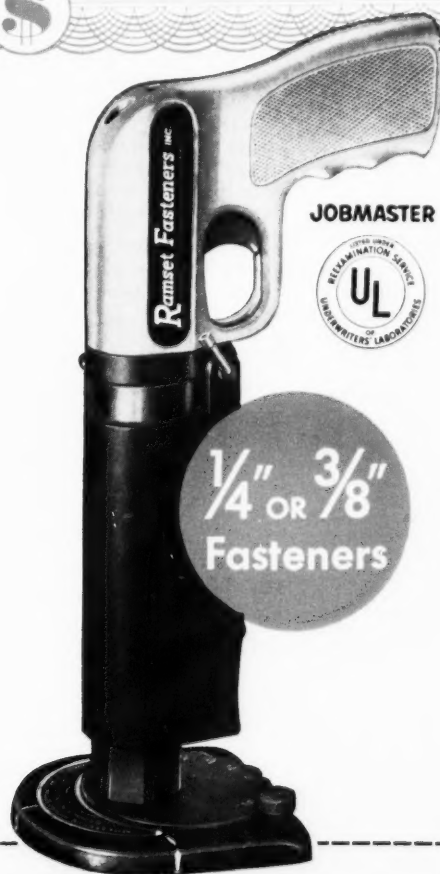
Your superintendents should know that Board regulations require the following steps be taken when there is a question of jurisdiction:

1. Make a specific assignment of work in dispute. It is a violation of
(Continued on page 82)

a blue-chip investment that pays

"DIVIDENDS UNLIMITED"

NEW *Ramset* PLUS-POWER JOBMASTER
for super-speed fastening into steel and concrete



Investigate—On every count, the PLUS-POWER JOBMASTER pays continuing "dividends unlimited". We suggest you investigate. Call your dealer or mail the coupon for on-your-job demonstration of how you can save time, money and work with RAMSET—the first powder-actuated fastening SYSTEM.

For quick, continuing profits on a small investment, look into this latest RAMSET development in powder-actuated fastening. The PLUS POWER JOBMASTER has already gained "top ratings" from its many enthusiastic users. It greatly extends the profitable use of powder-actuated fastening, to earn substantial savings in time, money and work. For instance:

Saves $\frac{1}{3}$ cost of powder charges—using lower-priced, light-duty charges, you can set most RAMSET Tru-Set studs and drive pins which formerly called for high-cost, heavy-duty charges.

Set new $\frac{3}{8}$ " Flat Head Drive Pins—these cost considerably less than comparable heavy-duty fasteners, yet are equally effective for anchoring exterior and interior framework to concrete slabs, and other wood-fastening applications—without using a disc.

Combines 2 tools in 1—with the same basic tool, you can use either a $\frac{3}{8}$ " or a $\frac{1}{4}$ " barrel, changing from one to the other in a few seconds. If you now own a standard JOBMASTER, let us convert it to this double duty at a nominal cost.

For six years, thousands of users have proved that high-speed, low-cost RAMSET SYSTEM pays "dividends unlimited" for fastening into steel and concrete.

Ramset Fasteners, INC. ANOTHER **Olin** PRODUCT

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Please send more details on PLUS-POWER JOBMASTER, the Blue-Chip investment for steel and concrete fastenings.

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CM-10



PRE-JOB PLANNING with local union officials is one form of dynamic labor relations. Jurisdictional decisions are made and put down on paper before job begins.

the Board's rules to hold up disputed work or shut down a project because of a jurisdictional dispute.

2. Assignment should be based on (a) a decision or agreement of record covering the disputed work; (b) where there is no decision or agreement, follow local practice; (c) if there is no local practice and no decision or agreement, the contractor should use his best judgment in assigning the work.

3. Once the assignment is made, the contractor must continue with no change in work assignment until and unless told otherwise by the Joint Board. When so directed, he must comply.

4. If there is a stoppage over assignment of work, immediately notify the Chairman of the Joint Board.

Many construction projects are

covered by the federal Wage and Hour law. Don't expect superintendents to become lawyers, but see that they know enough about this law to enable them to guard against violations. There are stiff penalties, often costly.

Briefly, this law covers employees (other than bona fide executive, administrative and professional) engaged in commerce, the production of goods for commerce or in closely related occupations directly essential to the production of goods for commerce. The last portion of the foregoing most often will apply to construction employees.

Employees, other than those excepted above, working on repairs to interstate roads or construction of new highways, bridges, etc. are generally covered. So also are employees engaged in repairs to or expansion of existing industrial plant facilities. Employees covered by this law must be paid at a basic rate of not less than 75c per hr and at least time and one-half the basic rate for all hours worked in excess of 40 in any work week.

Superintendents should be alert—so that when they hire survey

YOU CAN ... TAKE IT WITH YOU

IT'S PORTABLE!

Easily transported from job to job and set up for use in minutes.

Capacities:
20, 25 & 30 Ton

Platform Lengths:
18, 22, 24 and 30 ft.

REMOVABLE SIDE ARMS

The assembled scale can be moved by merely removing six bolts which hold the side levers in place. The complete scale can then be lifted as a unit and loaded onto a truck. Once positioned, it can be ready for use in minutes.

ACCURATE Perfectly balanced for lifetime accuracy. Wide steel bases, at both ends, support scale therefore require no concrete footing. Easy to read weighbeam is chrome-plated. Other vital parts are electro-plated against corrosion.

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**THURMAN
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TRUCK SCALE**

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parties, junior engineers, stenographers, laborers and mechanics, the method of compensation will comply with the law. You may prefer that they contact you. If you are in doubt you can, in turn, query the Regional Office of the Wage and Hour Division of the Department of Labor. There is an office in every major city in the country.

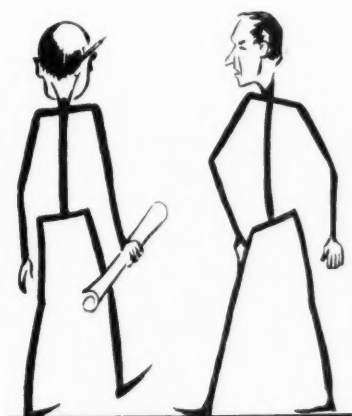
• **Do familiarize superintendents** with the special labor laws that apply to federal jobs, if you contract them. These laws are spelled out in formal contract. There will be, in accordance with the Davis-

ments of the Copeland Act and Eight Hour Laws in the contract. The Copeland Act prohibits any rebates (or kickback) of wages paid laborers and mechanics and the Eight Hour Laws require payment of at least time and one-half to laborers and mechanics who work in excess of eight hours a day. These laws have teeth, including the blacklisting of a contractor in violation so that he cannot bid on federal work for a stipulated number of years.

It is obvious that superintendents cannot know the ramifications of the Taft-Hartley Act. It is just as

well they do not. In this instance, a little knowledge is a dangerous thing. One thing they should know—no discrimination is permitted in hiring and firing of employees. If a building trades workman is fired at the request of a business agent, he can file an unfair labor practice complaint at the nearest regional office of the National Labor Relations Board, and the contractor (and maybe the union) is in trouble.

Lawyers' fees and back wage payments ordered by the Board can eat voraciously into the profits of a
(Continued on page 86)

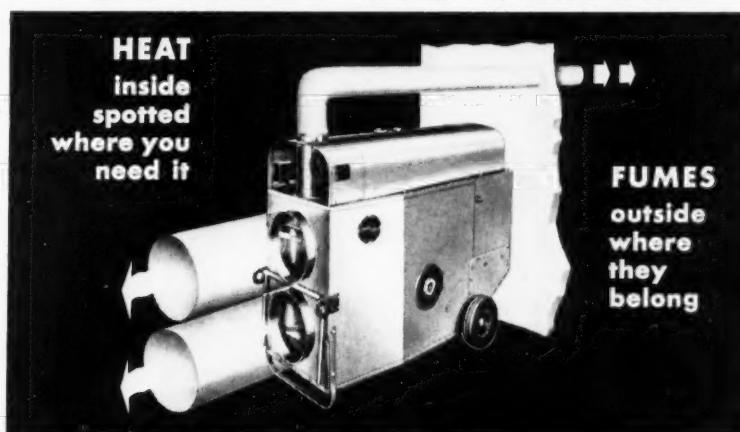


STRONG SUPPORT, NOT A "CHEWING OUT," is what the job superintendent with a tough labor problem needs from his boss. Be sure he's right, then back him when he is handed trouble.

Bacon Act, for example, a schedule of minimum wages to be paid laborers and mechanics employed at the site. These rates have been predetermined by the Secretary of Labor as prevailing in the area where the work is to be performed. While the contractor and his subcontractors may pay more than the rates specified, they must not pay less.

You also will find the require-

SAFE HERMAN NELSON PORTABLE AIR HEATERS



Cold weather work slowdowns needn't bother you this winter. Put Herman Nelson Portable Air Heaters on the job—at construction sites, in warehouses, loading areas, anywhere you want temporary or emergency heat. Direct clean heated air wherever you need it through flexible canvas ducts. With Herman Nelson there's no fire danger, no carbon monoxide, no fumes, smoke or soot. All combustion products are safely vented outside.

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Another Product of American Air Filter Company, Inc.
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GUIDE
TO THE SELECTION
AND USE OF
**PORTABLE
SPACE HEATERS**

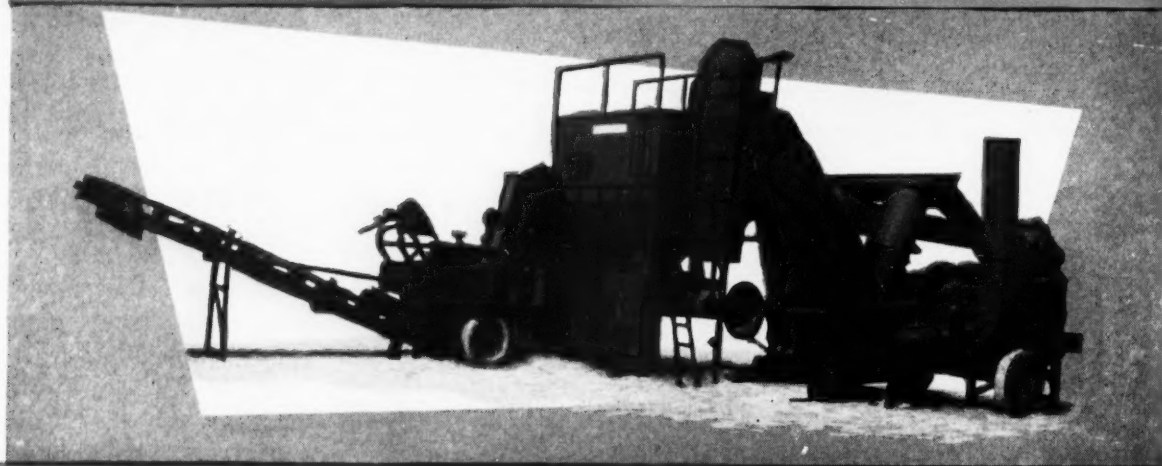
Get all the **FACTS**
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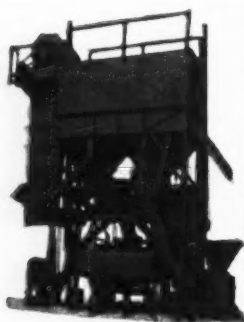
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CONTROL

YOUR CHOICE OF TWO GRADATION UNITS



(Above)
The Model 863,
semi-trailer
mounted for
complete
portability.

(Left)
The Model 864,
tower type for
use where
portability is
not the prime
consideration.

for the 15-35 ton-per-hour **BARBER-GREENE** 840 Bituminous Plant

Never before has gradation control—plus maximum portability and the established advantage of continuous mix—been combined in this capacity range.

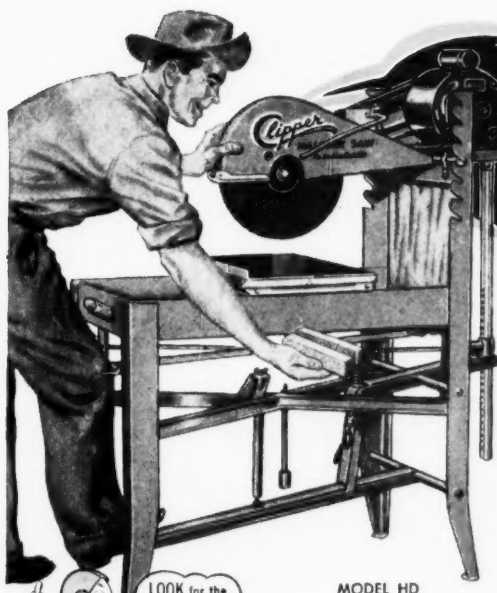
Two Gradation Control Units are furnished: (1) the Model 863 where portability is paramount; and (2) the Model 864 Tower Unit where portability is not so important. Being semi-trailer mounted, the Model 863 is completely portable. The Model 864 is designed in sections for easy hauling on truck or trailer. Both units screen and separate the aggregate up to three sizes (four-bin operation on tower type plant optional) . . . then accurately measure the aggregate and feed the required percentage of each size to the mixer.

53-3A-B

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Aurora, Illinois, U. S. A.





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C-130

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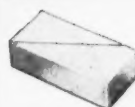
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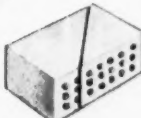
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LOOK JOE!... FREE TRIAL
GUARANTEES Your... Clipper
WILL PAY FOR ITSELF! MASONRY SAW



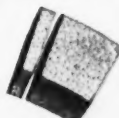
PORCELAIN
Cut in
22 SECONDS

VITREOUS
BRICK TILE
Cut in
21 SECONDS



VITRIFIED PIPE
Cut in
18 SECONDS

KILN BLOCK
Cut in
21 SECONDS



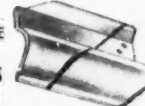
GLASS BLOCK
Cut in
8 SECONDS

CONCRETE
BLOCK
Cut in
19 SECONDS



FIRE BRICK
Cut in
4 SECONDS

ROOFING TILE
Cut in
14 SECONDS



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12 SECONDS

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15 SECONDS



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Makers of the famous McCulloch Chain Saws

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✓ For nearest LUBRIPLATE distributor, see Classified Telephone Directory. Send for free 56-page "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

**REGARDLESS OF THE SIZE
AND TYPE OF YOUR MACHIN-
ERY, LUBRIPLATE
LUBRICANTS WILL IMPROVE
ITS OPERATION AND REDUCE
MAINTENANCE COSTS.**



NO DISCRIMINATION is permitted under Taft-Hartley. If a workman is fired at the request of a business agent, for instance, he can file a complaint, get contractor into a jam.

job. Handling this type of situation is difficult and will continue so until the law is amended to meet the special needs of the construction industry.

Check the labor laws of states in which you work. Many states have stringent laws on hiring, anti-discrimination, etc.

If meetings of superintendents at your home office are not practical, an alternative method of reaching them is through distribution of memoranda and publications dealing with labor relations. This can be used also to supplement periodic meetings to keep superintendents informed of latest developments.

• Do work out the labor aspects of your jobs in advance. Effective job labor relations often result from pre-job planning. This means meeting with local union officials before the job gets under way. You can outline the job's manpower requirements, answer many questions, bury unfounded rumors, learn area practice on jurisdiction over particular phases of the work and availability of manpower. Also, you get to know the union leaders with whom you and the general superintendents must deal.

This procedure was followed successfully by a contractor before starting work on additions and replacements to a chemical plant. Since there was the possibility of a number of jurisdictional disputes on some of the work, a meeting at the site was arranged with union business agents and several inter-

national vice-presidents. Progress schedule of the job and its manpower needs were outlined, questions answered in full.

Union representatives then were shown a scale model (built, as it happened, by the client. Drawings will do just as well.) and asked to clear up a number of jurisdictional questions. They studied the model carefully, talked among themselves and came up with written answers.

The job, lasting two years, was completed slightly ahead of schedule. Although arguments arose during construction, there was not a single work stoppage or jurisdictional dispute. For the contractor—a satisfied client, a profitable job and dynamic labor relations.

Now look at the negatives

• Don't engage in feuds and fights with union leaders in areas where you perform work. You are the one most exposed and at stake is your money and reputation to build speedily and efficiently. Continual bickering frequently leads to strikes, and jobs are not built that way. However, where you are faced with a business agent unreasonable in his demands, with whom no agreement on job problems can be reached, the international union's area representative can be called in. Every building trades union has such officials who are frequently vice-presidents of the international. They are, in most cases, older men with cooler heads, thoroughly

(Continued on page 88)

Will this
happen
to your
next bid?



Whether or not you beat competition on a bid could depend on your bond rate. If you're ready with a *low, preferred* bond rate, you'll have an important advantage at your next letting.

To prepare for future bids, talk to your Indemnity Agent. Ask him to establish your credit line with Indemnity Insurance Company of North America, the largest independent, offering lowest bond rates* to contractors of *skill, integrity and responsibility*.

When you have established your qualified credit line, no one will be able to outbid you on this important item. You save money at Indemnity's low rates, too — and you are assured of getting bonds on future jobs without delay.

See your Indemnity Agent now. It may make the difference between rejection and acceptance on your next bid.

Look to the future . . . establish your credit line now!

*Indemnity's low rates are not available in Louisiana and Texas.



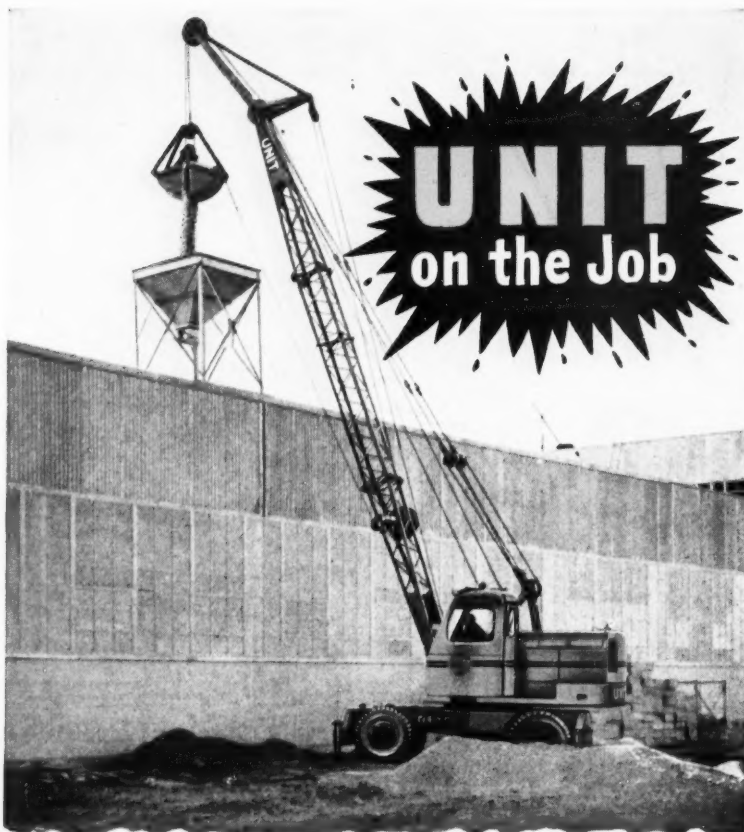
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One of the North America Companies, which are headed by Insurance Company of North America, founded 1792

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Primarily this roofing job would require the erection of a scaffold-type elevator to hoist wheelbarrow loads of slag pebbles, plus a crew of men to load and unload the wheelbarrows. This means loss of setup time and duplication of handling. Now, with a UNIT 357, you drive up to the job — hoist the storage hopper to the roof — fill the hopper and the job is started. When insulation, roofing paper or other supplies are required, the UNIT 357 can move around the building to any location and hoist the material right on the spot where it's going to be used. Mr. Contractor, compare these two methods of material handling. Turn your lost time into PROFITS with UNIT.

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CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL**



All Models Convertible to ALL Attachments!

BETTER RELATIONS . . .

Continued from page 86

experienced in smoothing out labor problems and calming stormy tempers.

Not long ago a contractor was faced with a jurisdictional dispute between two unions. Conferences with the two business agents resulted in no agreement on work assignment. Each refused to compromise. Before tempers got too hot (including his own), the contractor wired the presidents of the two unions requesting that their international representatives meet at the job site. The meeting was arranged and both looked over the work in dispute, conferred with the contractor and his general superintendent, met with the business agents and finally came up with the answer. Result: No delay or work stoppage. Time elapsed: Three hours.

• **Don't apply pressure** or blow off steam at general superintendents who have serious labor difficulties. Sometimes your anger at the union or unions involved in the dispute is directed at the job's superintendent whom you can rip apart when you dare not do the same to the unions. Besides being unfair to your superintendent such tactics tend to undermine his effectiveness in handling the problems, may even delay settlement. So give superintendents your strong support and assistance, if necessary. When he knows the boss is backing him, he's in a much stronger position to deal with trouble.

• **Don't shirk your responsibility** as a member of a contractor's association by failing to support its policies and decisions made on serious issues. Several years ago an association of contractors faced dissolution when negotiations with the local unions over wages reached a stalemate. A special general membership meeting was then held. It was decided by a large majority of those attending to resist the unions' demands even though a strike might result.

When the unions did strike, some association members who had not attended the special meeting refused to abide by the decision reached there. They resigned from the association and individually negotiated separate agreements with the unions. It will be many years before this association regains its lost prestige in the area where it operates.

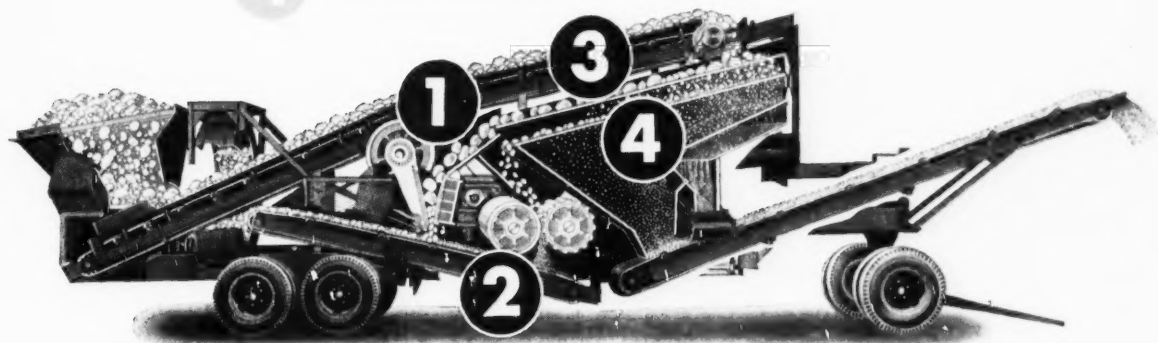
(Continued on page 90)

Get all 4 and MORE

WITH A **UNIVERSAL 880 SENIOR "R" GRAVELMASTER**

FOR THE FIRST TIME — 4 PLUS - PROFIT ADVANTAGES IN A PORTABLE PLANT DESIGNED TO MEET HIGHWAY WEIGHT LIMITS

- 1 **1036 ROLLER BEARING JAW CRUSHER.** Famous Universal overhead eccentric action. The industry's finest for 47 years. Two distinct crushing blows, force feed and fast discharge for top capacity.
- 2 **3024 ROLL CRUSHER,** roller bearing star gear drive. Designed to utilize full 24" width for top secondary crushing capacity.
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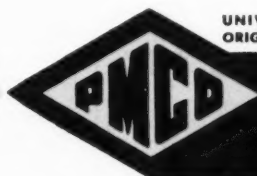
... AND MORE

- **PORTABILITY** -- Designed to meet State weight limits . . . less moving time, more production time.
- **DEPENDABILITY** -- Universal's time-tested, job-proven engineering cuts down time, keeps production rolling.
- **CAPACITY** -- Big jaws, rolls, screen and conveyors balanced and coordinated to produce maximum tonnage under a wide range of pit conditions. Result — top profits!

For full information regarding Universal's complete line, see your nearest Universal distributor or write Universal Engineering Corporation, 327 8th St., Cedar Rapids, Iowa. Universal is a subsidiary of Pettibone Mulliken Corporation, 4700 W. Division Street, Chicago 51, Illinois.

When you move, move quickly and easily with Universal Portable Plants AND YOU MOVE ON TO GREATER PROFITS.

**ENGINEERED FOR TOP
OPERATING PROFITS**



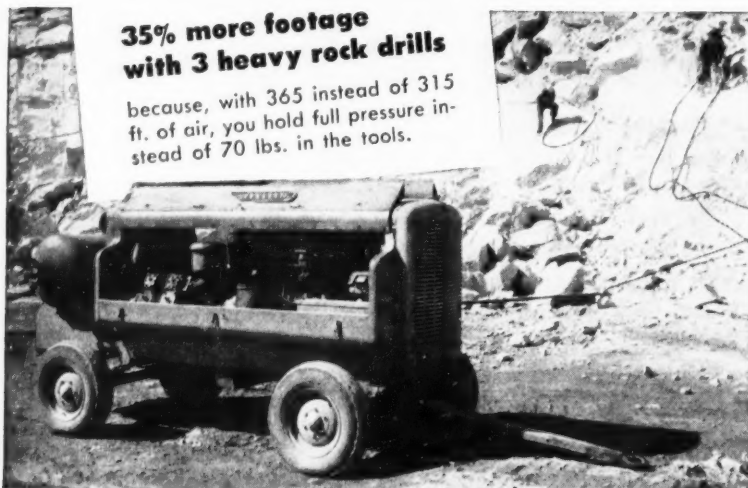
UNIVERSAL GAVE CEDAR RAPIDS ITS ORIGINAL FAME FOR QUALITY CRUSHERS IN CEDAR RAPIDS SINCE 1906

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same men, same tools do 4 days' work in 3

35% more footage with 3 heavy rock drills

because, with 365 instead of 315 ft. of air, you hold full pressure instead of 70 lbs. in the tools.



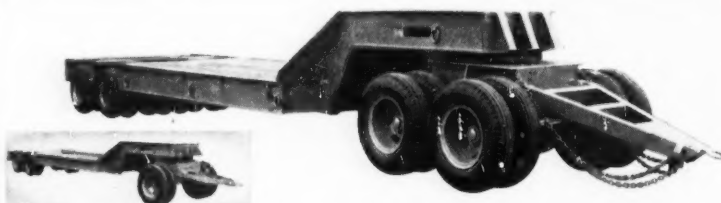
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125 ft.
185 ft.
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deliver 15% to 25% more 100 lb. air at lowest cost per cubic foot of any compressors on the market, to run tools at their full efficiency.

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Single axle flat
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Single axle, spring-
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Tandem axle tilt top,
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MODEL MSO-F (with tandem axle removable front dolly)

Engineered for heavy cantilever loads. Capacities 35 through 75 tons. Both lengthwise and crosswise axle oscillation means less road shock transfer to payload.

FOR ADDED SERVICE

Single or dual axle TRANSPORT front dollies convert semis to full trailers quickly and easily.

WRITE FOR COMPLETE INFORMATION

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Transportation Engineering A Specialty
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BETTER RELATIONS ...

Continued from page 88

Labor, which represents a substantial percentage of total construction cost, should be treated with respect. Don't formulate labor policy on a hit-or-miss basis. It is vital to you to adopt a positive approach to labor by the development of definite labor policies. It can spell the difference between profit and loss.

Big Program Set for Construction Safety Congress

A ROUND-TABLE panel discussion of "Job-Placement Physical Examinations on Construction Projects" will be one of the highlights of the Construction Section meetings at the National Safety Congress in Chicago Oct. 20-22. The Construction Section meetings, all scheduled at Hotel Hamilton, 20 S. Dearborn St., will open Tuesday afternoon at 2 pm with a session devoted to "Progress on Study of Construction Safety Needs" featuring safety needs in the heavy, highway and building construction fields.

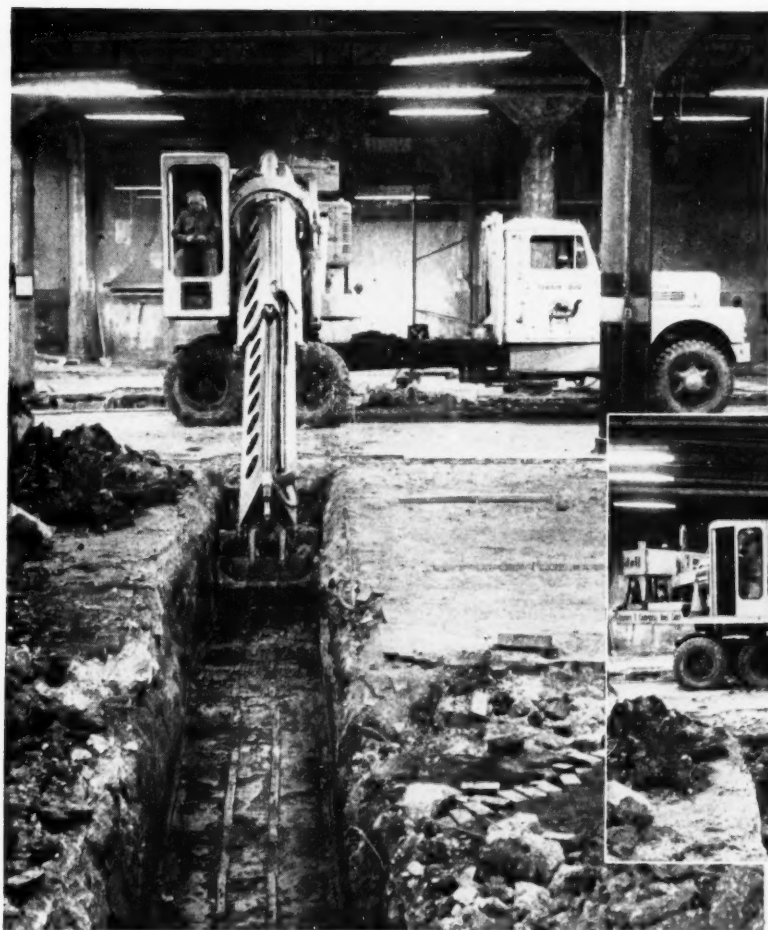
An all-day session Wednesday, Oct. 21, will open at 9:45 am with a business meeting, followed by a talk on "The Insurance Company's Part in Keeping the Contractor Competitive" by Stanley F. Staples, vice-president, Employers Mutual Liability Insurance Co. The afternoon session will be devoted to a panel discussion on physical examinations.

On The Panel

The panel will include: Geo. P. O'Rourke, O'Rourke Construction Co., Dallas, representing contractors; B. S. Quigley, Liberty Mutual, insurance; Andrew Westley, Brotherhood of Painters, Decorators and Paperhangers, labor; John Moulin, Illinois Industrial Commission; Dr. Maxwell M. Corbett, Chicago, medical; and R. H. Shinkle, American Bridge Co., job supervision. H. W. Richardson, Editor, CONSTRUCTION METHODS AND EQUIPMENT, will act as moderator.

Thursday morning at 9:45 another general session will be held on "Promotion Program for Construction Safety Needs, 1953-54." The program ends at noon. Executive Committee meetings will be held Tuesday morning and Thursday afternoon.

H. B. Alexander, President, H. B. Alexander & Son, Inc., Harrisburg, Pa., general chairman of the Construction Section, will preside at all meetings.



Working in tight places is a Gradall specialty! It exerts its powerful hydraulic down pressure and bucket wrist action to dig a trench inside this low-roofed building.

Gradall's arm-action boom swings around and reaches out to dump spoil into waiting truck in these cramped quarters.



Gradall slashes job time—cuts costs 60%!

● "Our first experience with a Gradall was on a contract for a defense plant. By using the Gradall we reduced our costs 60% and cut the estimated job time in half," reports Mr. L. E. Kirby of the Kirby and McGuire Co., Baltimore, Md.

"The contract called for digging acid pits, excavations for machinery bases, a large excavation

for a plating plant, trenches for water and sewer lines, and holes for sewer connections. We had to do the whole job inside an existing building with 15 feet clearance and concrete columns about 16 feet apart. Originally we planned to do the digging by hand—then we learned about Gradall!"

Like Kirby and McGuire, contractors everywhere are finding

the multi-purpose Gradall is a real *money-maker*—because it does *more* jobs better, faster and cheaper.

Your nearest Gradall Distributor will be glad to show you how the Gradall will increase *your* profits—enable you to bid on more jobs. Ask him for a field demonstration on your own work.

**Gradall Distributors in over 75 principal cities
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YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY



TRU-LAY Preformed WIRE ROPE



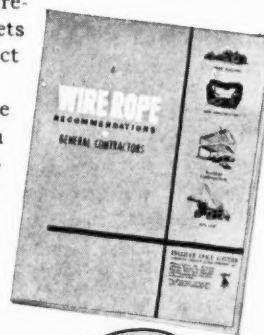
What Drag Rope Do YOU Use?

• There are three ropes (boom, hoist, and drag) on dragline machines, but let's just talk about the one which wears out the fastest—the drag rope. It is frequently down in the dirt; it is subject to a terrific amount of abrasion; it gets jerked and snapped—yet, if you use the correct construction, you can expect reasonably long service.

What Is The Best Construction? Bigger outside wires wear longer and if the rope is Lang lay, more length of each wire is exposed adding to abrasion resistance. (Preforming of TRU-LAY makes Lang lay easy to handle.) Now to withstand the shock loads, TRU-LAY Preformed is made with improved plow steel wires (identified by the GREEN strand) and an independent wire rope core. Here's really a tough rope for a tough job.

You don't have to guess which rope is best for each job you have—not if you get a copy of AMERICAN CABLE'S "Wire Rope Recommendations for General Contractors." It tells you exactly what you need. And the recommendations are based on careful recordings of many field studies by TRU-LAY engineers.

See your AMERICAN CABLE distributor today or write our Wilkes-Barre, Pa., office for a free copy of No. 128-B "Wire Rope Recommendations for General Contractors."

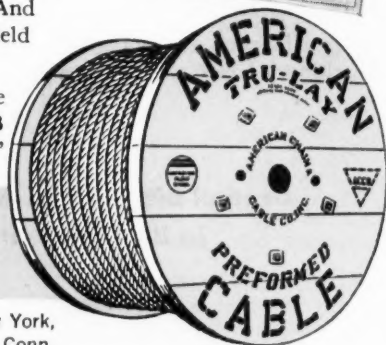


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SURE DO THE JOB!



Euclid Scrapers—12, 15.5 and 18 cu. yds. struck...190 to 400 h.p. engines...top speeds, loaded to 30 m.p.h.



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Rear-Dump "Eucls"—10, 15, 22, 34 and 50 tons...125 to 600 h.p....spring mounted or semi-rigid drive axles....top speeds loaded to 36 m.p.h.



On construction and mining jobs the world over you'll hear owners say, "those 'Eucls' make more money for us and do more work than any equipment we've ever used." Operators, too, like "Eucls" because they're easy to handle and have plenty of what it takes to haul and dump big loads in tough going.

There are lots of reasons why men who know earth moving equipment specify Euclids, but they all add up to one simple fact... "Eucls" move more loads per hour at the lowest cost per ton or yard of material moved. Profitable performance on all types of work is proved by the fact that over 60% of all Euclid equipment sold is repeat business from satisfied users.

When competitors are using "Eucls" to move dirt or rock faster and cheaper than you are, you can't afford to pass up the cost cutting advantages you get in Euclid equipment. For the recommendations of a hauling equipment specialist and a production and cost estimate on your job, get in touch with your Euclid distributor... there's no cost or the slightest obligation.

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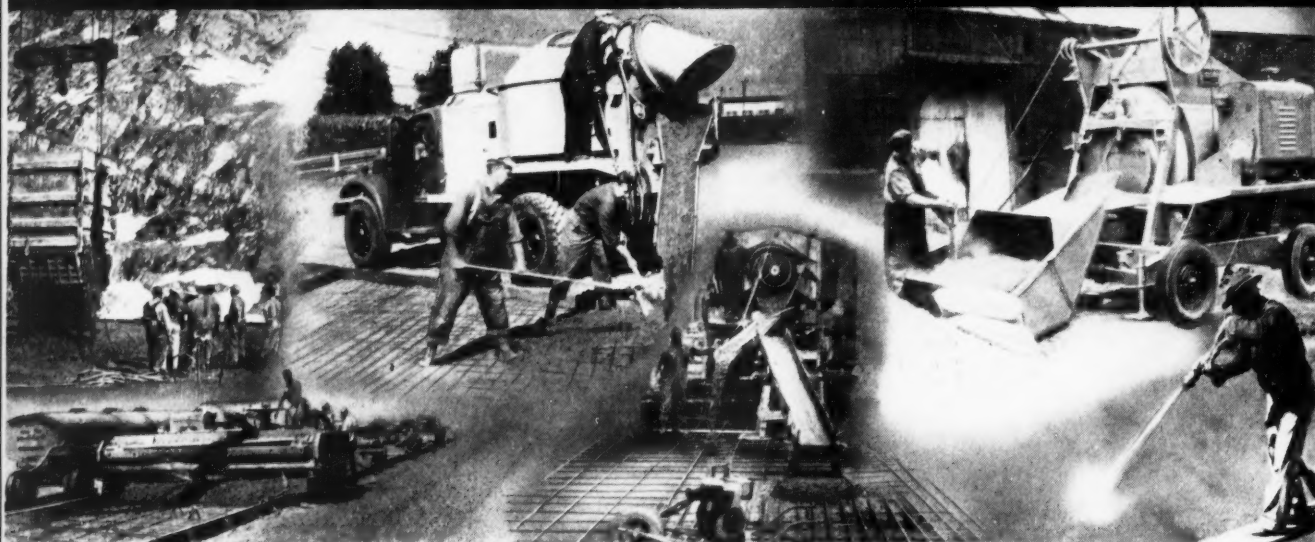


Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



CONCRETE MIXING AND PLACING



1. Portable and Semi-Portable On-The-Job Plants

• This is the first of a series of articles on the fundamental principles of concreting, from the batching and mixing to the placing, in all types of structures and on surfaces, such as highways. Concreting equipment selection, application and maintenance, production factors and job engineering will be discussed.

Some of the information may appear elementary to an old hand at concrete work. But the idea is to furnish a complete description of the subject—to serve as a comprehensive reference and practical guide both for those who work regularly with concrete and those who use the stuff only occasionally.—The Editor.

By THEODORE B. APPEL, JR.
Chief Engineer, The C. S. Johnson Co.
Subsidiary Koehring Co.

CONCRETE PLANTS are a relatively recent development, coming within the last 30 yr. Prior to the mid-20's the construction industry used some of the types of equipment we use today in concrete plants, but, unless we are historically minded, there is little to learn from a study of those early facilities. The concrete plant is still a new tool. Its development has not yet reached maturity and is attended by controversy and rapid change.

This discussion will be confined to facilities in general use today to

produce concrete, starting with the equipment provided to receive the material at the site of operations and ending with the equipment for proportioning and mixing.

Concrete plants cannot be classified rigidly as to use, or size, or by any other arbitrary classification. Many plants overlap specific groupings. There are single-use units both large and small, multi-purpose units also large and small, portable, semi-portable and fixed installations. There are as many varieties of plants as the alert minds of the manufacturers, own-

ers and operators have been able to devise.

To discuss the subject in an orderly fashion, let us divide concrete plants into two major divisions: (1) Portable and semi-portable plants, and (2) permanent plants. In the first must be included on-the-job plants, plants for highway construction and plants for airfield construction. In the second group are commercial ready-mix plants, concrete products plants and mass concrete plants.

Portable and Semi-Portable On-the-Job Plants

• **Volumetric Batching**—From the beginning of the century until the late 20's emphasis was placed on the mixing of concrete and little emphasis on proportioning. Large mixers were steam-engine driven. Development of the gasoline engine made practical the 1- and 2-bag mixers and their use became widespread. With the exception of large dam jobs, all concrete was mixed at the site in portable mixers. It was discharged into wheelbarrows for transfer to the forms.

Proportioning was strictly vol-

umetric and often anything but accurate. Mixes commonly used were the 1:2:4, 1:2½:5 and 1:3:6, being the proportions of cement, sand and coarse aggregate. Shovels and wheelbarrows were the accepted units of measure for sand and stone. The unit of measure of cement was the bag (1 cu ft or 94 lb). One-half bag was just as little over or under 47 lb as the experience of the mixer operator dictated, and many were surprisingly adept at splitting a bag.

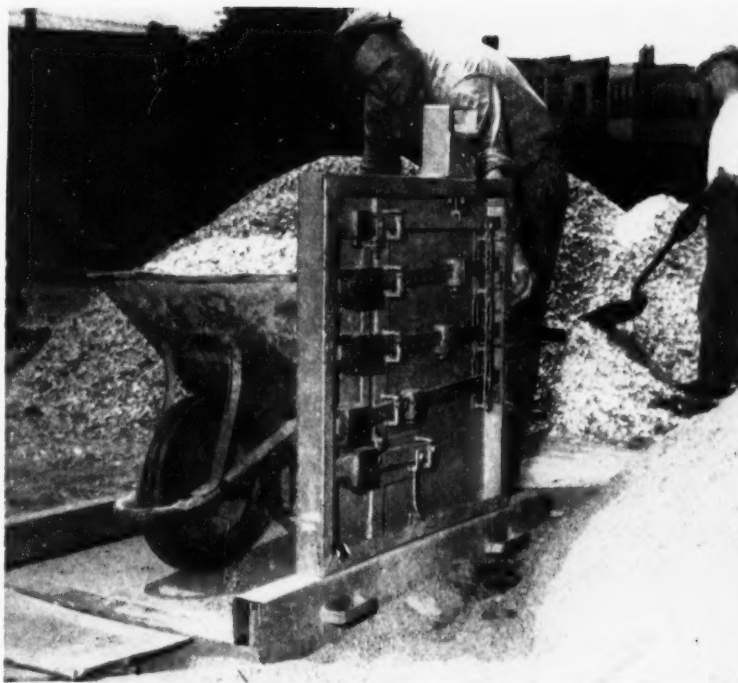
Water was added to the mixer before and during mixing, as required to produce the consistency desired by the concrete foreman. It was standard practice to have a barrel of water near the mixer into which the operator dipped his pail. He threw the water into the mouth of the mixer pail by pail until the concrete looked right to him. In this case the operator didn't have to worry much about moisture content of the sand. It is the easiest known method of compensating for moisture.

In these early days, in an attempt to improve on crude proportioning methods, a few specification writers and governmental agencies required the use of measuring boxes. These boxes, generally made of wood, were filled to the top with sand or stone and then struck. This was a tedious and laborious job. For larger jobs, such as concrete road construction, measuring boxes were hung beneath wooden bins.

• **Wheelbarrow Scales** — Use of weigh batchers by the road builder paved the way for the use of wheelbarrow scales for proportioning of concrete aggregates. These scales were used extensively in the construction of commercial and industrial building footings, reinforced concrete framing and floor slabs, and sidewalks. Wheelbarrow scales were the most practical means available before the advent of the ready-mix plant for all concrete construction excepting roads, large dams and other mass concrete structures.

Wheelbarrow scales still have, and will continue to have, a place in construction. They should be selected for use:

1. For remote or inaccessible areas.
2. For small yardages or small pours in less remote regions where the long haul of ready-mix concrete cannot be justified.



WHEELBARROW SCALES currently are equipped with a tare beam, three weigh beams, generally of 500-lb. capacity each, and a balance indicator. Compensation for wheelbarrow weight is through a counterweight on the tare beam.

3. For small concrete products plants producing ornamental concrete products.
4. For construction in foreign countries where there is an abundance of cheap labor.

Wheelbarrow scales currently manufactured are equipped with a tare beam, three weigh beams, generally of 500-lb capacity each, and a balance indicator. The counterweight on the tare beam is adjusted to balance out or compensate for the weight of the wheelbarrow. A beam lifter permits the operator to add or remove any one or all of the weigh beams from the scale system.

The weight of each material required in the mix is set on the weigh beams, one to a beam, by adjusting the position of the poise weights. In this way the operator can weigh sand, stone or cement without changing the position of any of the poise weights—by merely unlocking the proper weigh beam. The balance indicator shows whether the material in the wheelbarrow exactly balances the weight set on the weigh beam in action.

One unit now manufactured consists of a lightweight, portable, two-compartment storage bin in combination with a weighing hopper which rests on a wheelbarrow

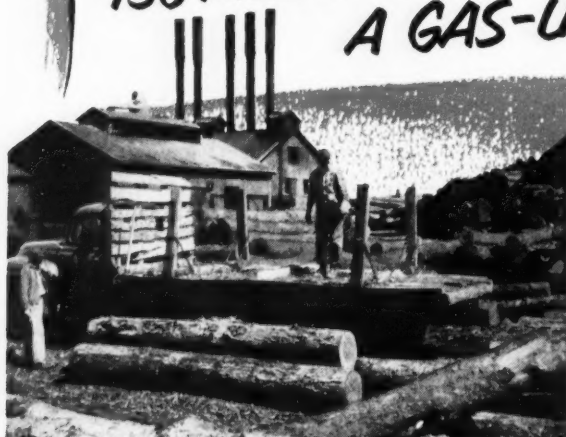
scale. The storage bin is charged with sand and stone by a front-end loader. It has a capacity of about 2 tons. The weigh hopper, equipped with a discharge gate, is high enough off the ground to allow material to flow by gravity into the skip of a 6S, 11S or 16S mixer.

The wheelbarrow scale is low in cost and, used in conjunction with a small construction mixer, constitutes the smallest on-the-job concrete plant capable of producing a controlled, quality concrete. Production capacity of such a plant is established by the size of the mixer.

• **Trolley batcher plants**—Development of the front-end loader brought about a remarkable change in on-the-job plants. Loaders made feasible the production of a low steel bin with a track carrying a special scale and weigh hopper. Such bins range in capacity from 8 to 40 tons, although there is available a unit which has a storage of only about 3 tons. The batchers range in capacity from 1,000 to 4,000 lb and usually are equipped with 2, 3 or 4 weigh beams for accumulative weighing. This system of weighing will be discussed in more detail in a section on Batchers.

(Continued on page 97)

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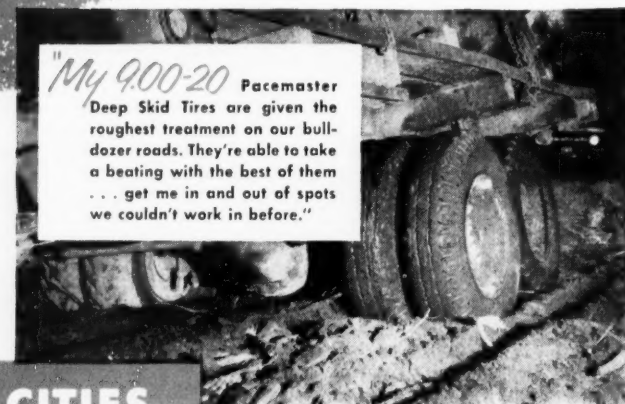
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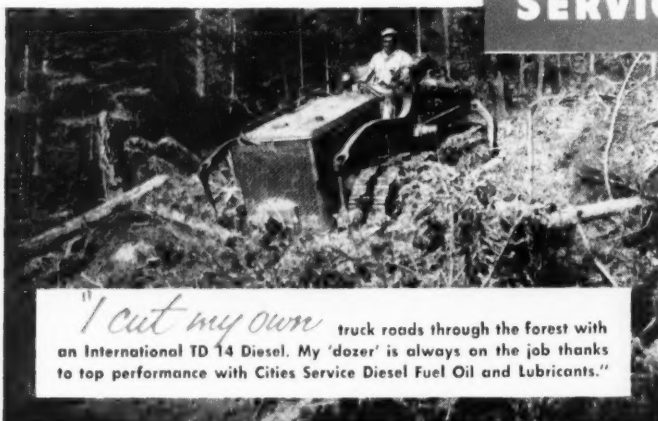
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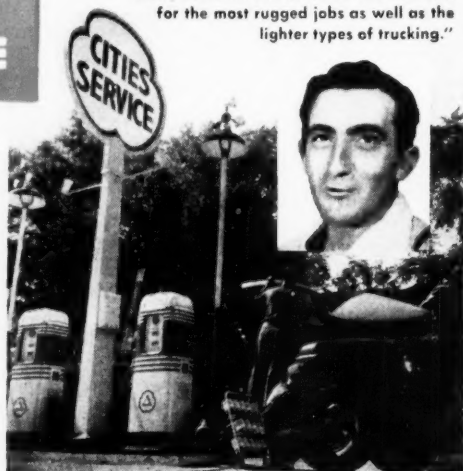
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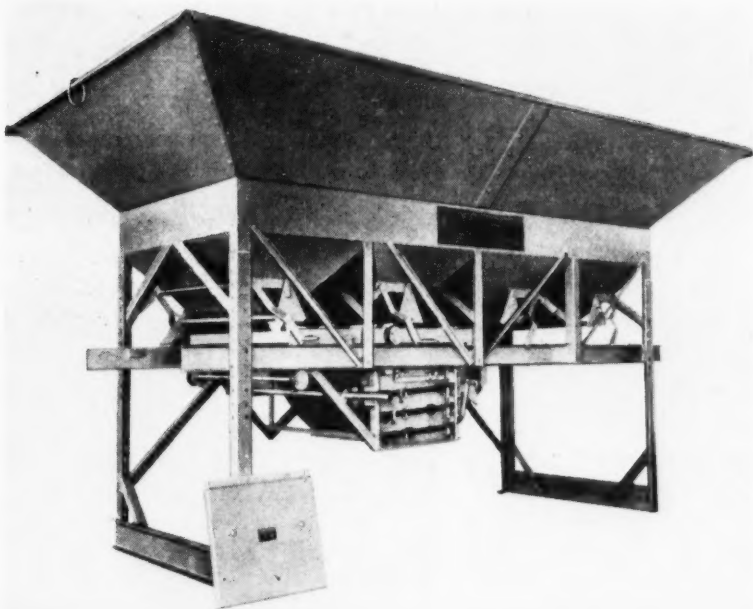
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Starting with the material in the end compartment, the operator weighs up successively each material, pushing the weigh hopper forward on the track from bin gate

to bin gate until all materials have been weighed. He then pushes the weigh hopper, on the same track, out from under the bin to the hopper's extended position over the

TROLLEY BATCHER PLANTS range in capacity from 1,000 to 4,000 lb. are equipped with 2, 3, or 4 weigh beams for accumulative weighing. Bin capacity runs from about 8 to 40 tons.

mixer skip. Bagged cement is dumped into the skip, completing the batch.

Bins usually are made of 3/16-in. or No. 10 gage steel sheets. They may be in various compartment arrangements ranging from one to four compartments. Some two-compartment bins have a large and small compartment which permits greater storage of the material most used, coordinating the charging operation with the batching operation. Low height is achieved by using dual gates or extra wide gates to reduce the height required for the sloping bottom. Most bins rest on legs which are adjustable as to height.

Pivot seats and scale levers are suspended from a rigid scale frame. This scale frame also carries the beam box in which are located the tare beam used to balance the weight of the weigh hopper.

(Continued on page 100)

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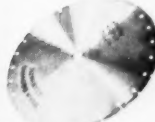
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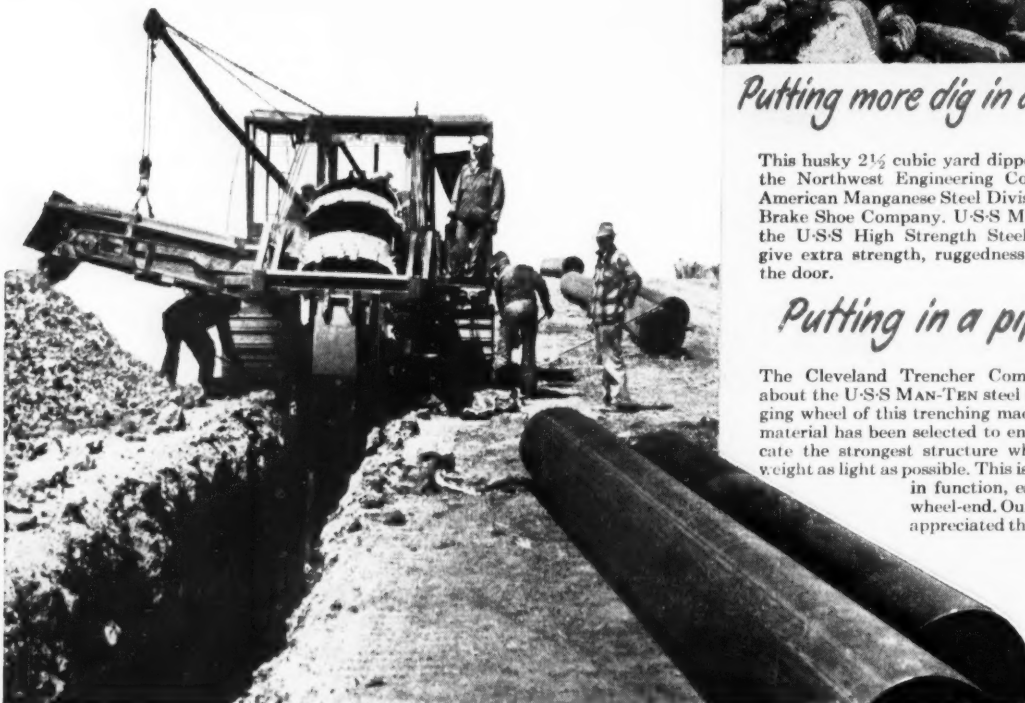


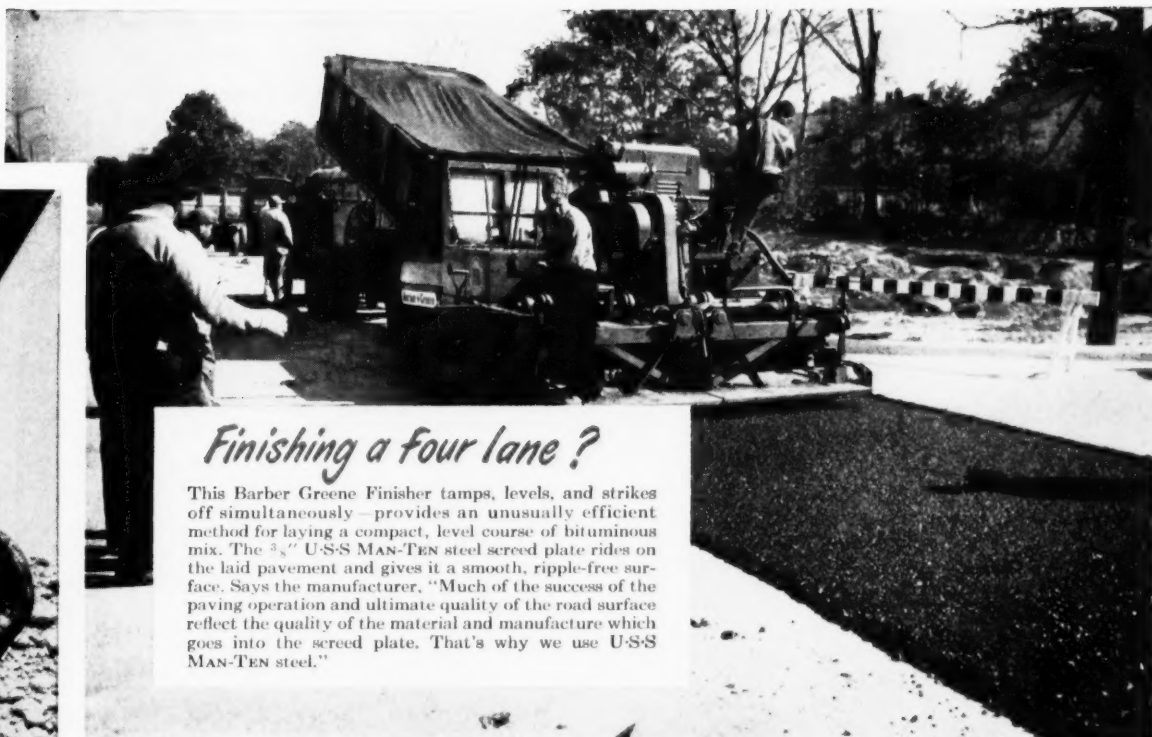
Putting more dig in a dipper ?

This husky $2\frac{1}{2}$ cubic yard dipper was made for the Northwest Engineering Company by The American Manganese Steel Division of American Brake Shoe Company. U·S·S MAN-TEN—one of the U·S·S High Strength Steels—was used to give extra strength, ruggedness and rigidity to the door.

Putting in a pipeline ?

The Cleveland Trencher Company says this about the U·S·S MAN-TEN steel used for the digging wheel of this trenching machine. . . . "This material has been selected to enable us to fabricate the strongest structure while keeping the weight as light as possible. This is most important in function, especially for the wheel-end. Our customers have appreciated this construction."





Finishing a four lane?

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CONCRETE . . .

Continued from page 97

the various graduated poise beams, one for each material to be weighed, and the over-under indicator. The scale frame mounts the axles and wheels which run on the track. The weigh hopper is suspended from the scale lever system in a conventional manner. Thus the weigh hopper and scale system move as a unit along the track. This arrangement works well, provided pivot and pivot seats are rugged enough to withstand the pounding due to motion on the track and severe jolts which occur when the trolley bumps against one of the stops at the ends of the track.

Portable bin and batcher plants have an important place in construction today. They have made possible accurate proportioning of concrete ingredients for on-the-job batching. They provide means for mechanizing small or remote concrete operations and fill the gap between wheelbarrow operations and ready-mix or permanent plant operations.

Portable bin and trolley batcher plants can be used profitably:

1. For remote and inaccessible areas where the volume or rate of pour does not warrant setting up a conventional permanent batching plant.
2. In highway construction for headwalls and small bridges.
3. For concrete curb and sidewalk construction, for foundation and basement pours in residential construction where ready-mix concrete is not available or uneconomical, price-wise.

Each of the various units manufactured today has its merits. When considering the purchase of such a unit the contractor should consider:

1. Whether the size of his operations requires only one of the smaller units or whether one of the larger units will be desirable.
2. The size in cubic feet of the weigh hopper. It should be not less than 1 1/3 times the rated size of the mixer with which it is to be used.
3. The width of the batcher discharge gate. It must not be greater

(Continued on page 104)



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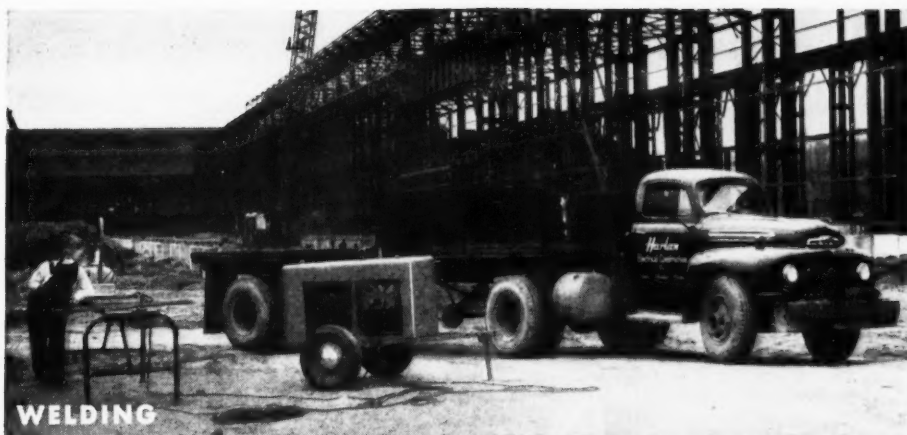
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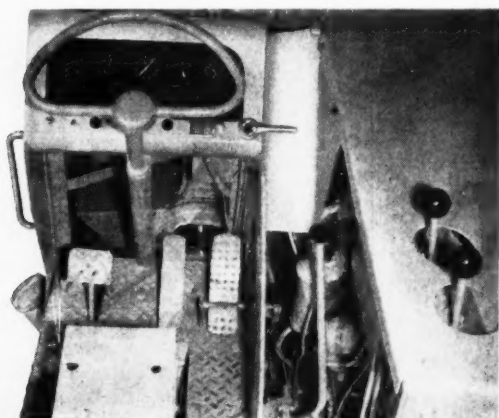


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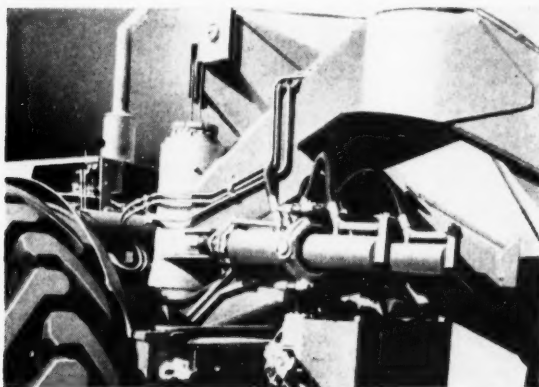
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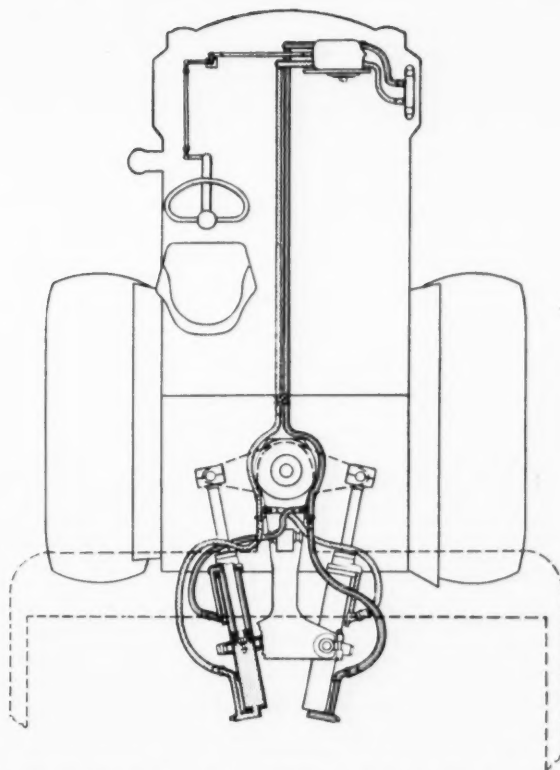
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TABLE I

Mixer Size	Hopper Capacity (Cu Ft)	Weigh Beam Capacity (Lb)			
		2 Agg. Batch		3 Agg. Batch	
65	9	Min.	Desirable	Min.	Desirable
115	16	500	750	500	500
165	22	1000	1000	750	1000
		1250*	1500	1000	1500

* A 1000-lb beam would be sufficient for many batches. For those batches requiring more than 1000 lb of aggregate the operator may (a) use two beams, if an extra beam is available, or (b) set the poise weight at one-half the total weight and weigh this material twice.

TABLE II

Mixer	Max. Batch	Mixer Production—Cubic Yards Per Hour		
		60 Sec (45 Batches/Hr)	80 Sec (36 Batches/Hr)	100 Sec (30 Batches/Hr)
3 1/2 S	3.9 Cu Ft	6.5	5.4	4.3
65	6.6 Cu Ft	11	8.8	7.3
115	12.1 Cu Ft	20	16	13
165	17.6 Cu Ft	29	24	20

than the width of the mixer skip.

4. If the bin is to be charged with a front-loader: Whether the top of the bin is low enough.

5. If the bin is to be charged with a clamshell bucket: Whether the partitions are spaced sufficiently to allow charging without contamination and spillage.

6. Whether the conversion of the bin from a small, low unit to one of greater storage requires strengthening of the legs or merely the addition of top panels.

7. Whether 2, 3 or 4 compartments are required. It is desirable to have a bin which has enough compartments for "that unusual job," or one which can be converted into a bin with more compartments merely by bolting in an additional partition.

8. Whether the batcher is arranged to charge 1 or 2 mixers.

9. Whether pneumatic-tired wheels are needed to permit quick jumps from one site to another.

10. If wheels are not included, whether width of the bin permits hauling on a common dump truck or whether a flat-bed or low-bed trailer is required.

Selection will require a careful weighing of the merits of one unit against the merits of others. Since construction equipment must be sturdy and rugged, the contractor should consider carefully whether to buy one which is relatively light in weight for extra portability or one which is heavier but which probably will give longer, trouble-free use.

The larger of the bin and trolley batcher units generally will require about a 1-min 20-sec cycle (45 batches per hr) for a two-material batch; a 1-min 40-sec cycle (36 batches per hr) for a three-material batch; and a 2-min cycle (30 batches per hr) for a four-material batch. The mixer used normally establishes production of a plant. Table No. 1 shows hopper and weigh-beam capacities for various mixers.

The batch is usually designed so that cement used is one or more full bags. This eliminates the need for splitting bags or weighing cement. If specifications require weighing, it will be necessary to use either a wheelbarrow scale for cement or to modify the bin so that

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one compartment can be used for cement. This will require a change in bin gates because standard bin gates are not cement-tight. Using one compartment as a cement compartment will allow weighing the cement on the same scale and in the same hopper with the aggregates.

State and other governmental agencies often require that cement be weighed on a separate scale. Bin and batcher units can be purchased (but usually only on special order) which have a special cement compartment and special batcher with two separate scale systems and weigh hoppers, one for aggregate and one for cement. Further development along this line is to be expected.

• **Mixers for Portable Plants**—The Mixer Manufacturers' Bureau of the Associated General Contractors has established concrete mixer standards. All member manufacturers and many non-members adhere to these standards. Copies of "Concrete Mixer Standards" can be had by writing to any one of the member manufacturers.

The 3½S and 6S mixers are the

standard sizes for small tilters while the 3½S, 6S, 11S and 16S are the standard sizes for non-tilters. The 3½S is a ½-bag mixer, the 6S a 1-bag mixer, the 11S a 2-bag mixer and the 16S a 3-bag mixer for all except the richest mixes, in which case it is a 4-bag mixer.

The 3½S and 6S tilting mixers were at one time equipped with charging skips but due to the high cost are no longer manufactured with skips. These mixers are generally charged by hand shoveling. They have no batchmeter or timing device. It is not uncommon to see the batch discharged as soon as the man has finished shoveling. For these reasons—although the small tilters are excellent machines and have the advantage of low cost—they cannot be considered for use where controlled concrete is specified.

Non-tilting mixers are well fitted to produce quality concrete. They can be purchased with water measuring tanks and batchmeters, either as standard equipment or as optional extras. The water measuring tanks, which batch water volumetrically, automatically charge

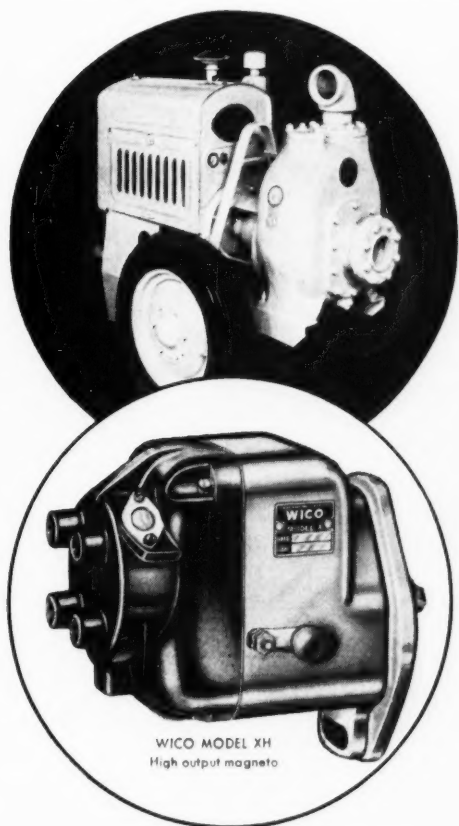
the mixer with a pre-selected amount of water with considerable accuracy when the operator raises the skip.

A batchmeter controls mixing time by locking the discharge mechanism so that the mixer cannot be discharged until the set mixing time has expired. Batchmeters usually are equipped with a bell to inform the operator when a mix is ready to be discharged. The skip automatically starts the batchmeter when it reaches charging position.

When buying a mixer it is wise to make certain that it is equipped with a self-priming pump. It also should have provision to shake the skip automatically since this will speed up operations and contribute in large measure to keeping the skip clean.

In the section on trolley batcher plants it was pointed out that the width of the batcher discharge gate must not be greater than the width of the mixer skip. The following table gives the approximate width of mixer skips. Since widths vary with different mixers it is important to check the actual width of the skip on the mixer to be used

(Continued on page 107)



WICO MODEL XH
High output magnet

For power when you need it— choose **WICO MAGNETOS**

Construction equipment has to work any time, in any weather—and that's tough service for ignition systems. That's why leading manufacturers put Wico Magnetos on many of their engine-driven units. The CMC Centrifugal pump shown at left, for example, is powered by a Hercules IXB engine equipped with a Wico Magneto.

The Wico XH Model, widely used on construction equipment, is heavy-duty in every way. Features like its weather-proof plastic-jacketed coil, one-piece cast rotor, hefty tungsten contacts and pre-lubricated bearings add up to real ruggedness that withstands any field conditions.

For ignition that delivers power whenever you need it, look for Wicos on your new engines. And always replace with a Wico when you do an overhaul.

Your nearby Wico Station will give you prompt service. For full details, write to us today.

WICO ELECTRIC CO.

West Springfield Massachusetts

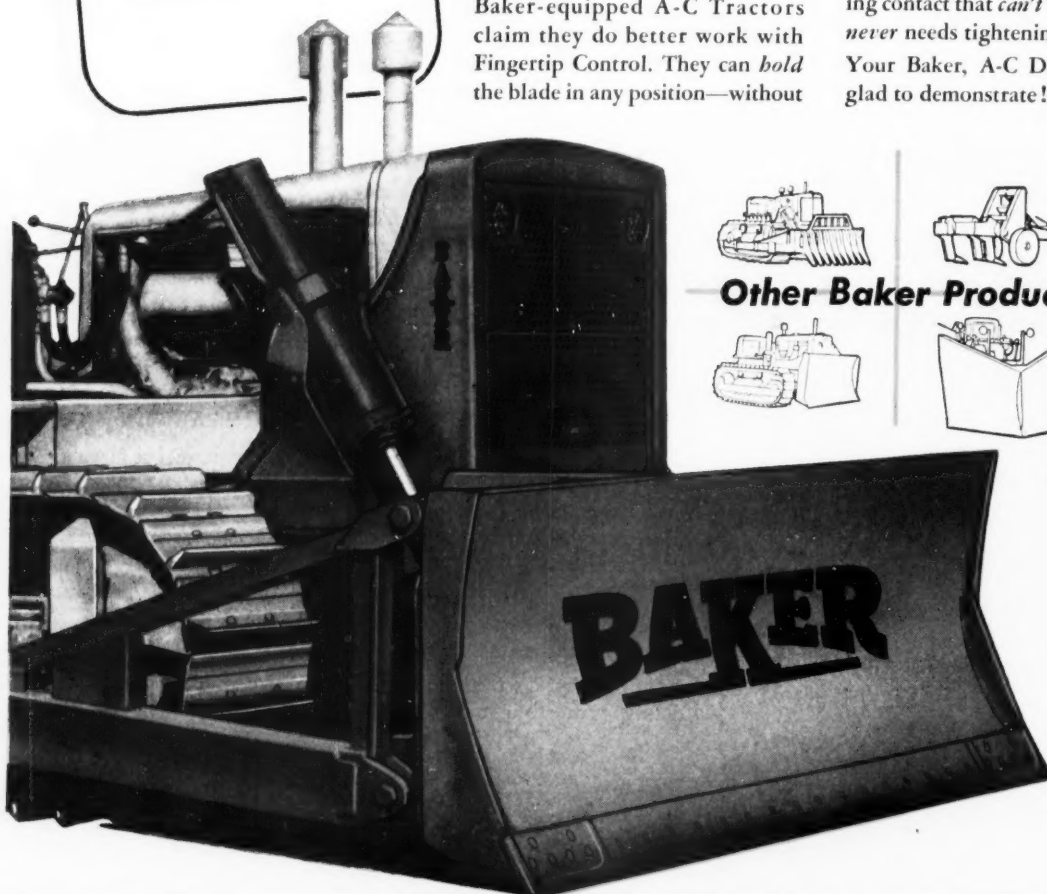
Manufacturers of Wico "Autostop" and the "Puff-A-Lite" Automobile Lighter





NEW POWER CONTROL UNIT

Be sure to see the all-new Baker PCU-75 . . . featuring a Multiple-Disc Clutch with higher capacity—3-Way Adjustable Hand Levers—faster, more rugged brakes with single-point adjustment.



Tough Blade

you won't drive thru

Fingertip Control

you don't have to fight

Easy Tilting

you don't have to tighten

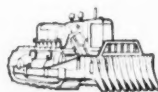
Tough Blade—Baker Bulldozers and Gradebuilders feature construction of tougher steel with greater wear resistance. That's why they last longer . . . why operators say "you won't drive through a Baker Blade!"

Fingertip Control—Operators of Baker-equipped A-C Tractors claim they do better work with Fingertip Control. They can *hold* the blade in any position—without

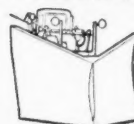
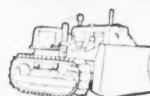
settle or "suck-in". Responsive to lightest hand-pressures, the Baker Fingertip Control is one *you don't have to fight*.

Easy Tilting—Two quick-shift pins at the trunnion brackets permit full arc-movement, up to 12" in five positions . . . with full-bearing contact that *can't* work loose—*never* needs tightening.

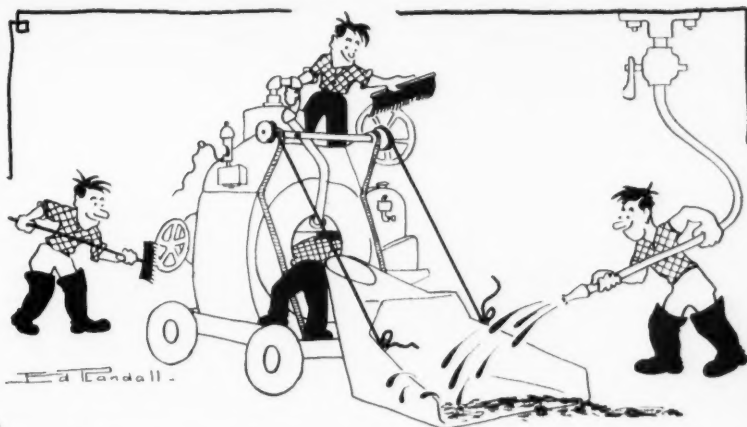
Your Baker, A-C Dealer will be glad to demonstrate!



Other Baker Products



THE BAKER MANUFACTURING COMPANY • SPRINGFIELD, ILLINOIS



DAY'S END CLEANING of the mixer and lubrication on a schedule according to manufacturer's specifications will give twice the life and one-half the production interruptions.

rather than to rely completely on widths given in the table.

Mixer	Skip Width
6S	46 in.
11S	56 in.
16S	66 in.

Many manufacturers give the buyer his choice of several power units. He can choose between a gasoline engine and a diesel engine. Gasoline engines cost less and use a fuel which is more readily obtainable. The average mixer operator is more familiar with gasoline engines. Diesel engines cost about twice as much as gasoline engines but show a considerable saving in fuel cost. Great progress has been made in the improvement of small horsepower diesel engines in recent years and those now manufactured are rugged and dependable.

If a gasoline engine is selected, the choice between an air-cooled or a water-cooled engine must be made. Air-cooled engines do not freeze up on an unexpectedly cold night. Water-cooled engines can be expected to give better performance and longer life in regions of high temperature, such as the southern part of the U. S. and the tropics. Engines which deliver the required horsepower at relatively low speeds can be expected to give dependable, trouble-free operation and long life. Dependability and long life are prime considerations for contractors.

All concrete mixers made in conformance with Mixer Manufacturers' Bureau Standards have guaranteed capacities of the nominal capacity, plus 10%. Thus the guaranteed capacity of a 16S mixer is 16 plus 1.6 cu ft, or 17.6 cu ft of mixed concrete.

Table No. II shows maximum production to be expected:

Thousands of words have been written upon the importance of cleaning and maintaining construction equipment. In spite of this it is not uncommon to find mixers that have been maintained improperly and poorly lubricated—or have not been lubricated at all. Of the many pieces of construction equipment the mixer above almost all others must be thoroughly cleaned at the end of each day's operation. The owner who allows his operator to neglect this is asking for trouble. It is safe to say that a mixer which is cleaned regularly and lubricated on a definite schedule in accordance with the manufacturers' recommendation will have twice the life and one-half the production interruptions of a mixer that is neglected.

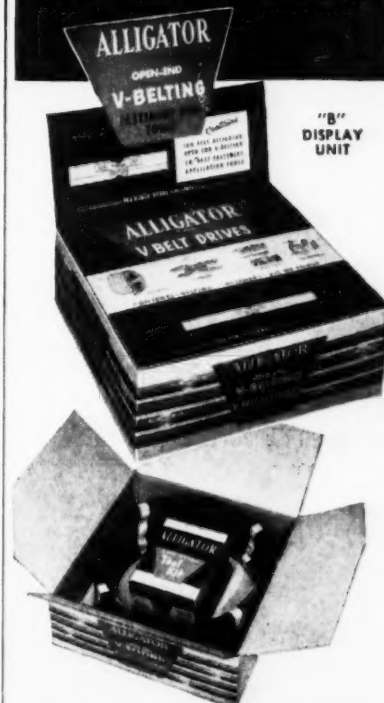
Bidding Guide Issued

NEWLY REVISED, another edition of "A Suggested Guide to Bidding Procedure," developed jointly by the Associated General Contractors of America and the American Institute of Architects, has just come off the press.

A major change is included under Section IV, sub-paragraph (i): "If after bids are opened, the low bidder claims that he has made an appreciable error in the preparation of his bid and can support such a claim with the owner and the architect, he should be permitted to withdraw his bid. In such instances the award of the contract should be made to the next lowest bidder." The guide is available from the AGC, Munsey Building, Washington 4, D. C., or from AIA, 1735 New York Ave., Washington, D. C.

ALLIGATOR V-BELT DRIVES

... you can make up all lengths of V-Belts quickly



- ★ Units contain V-Belting, Fasteners and Tools — everything you need in one package for all emergencies when correct endless V-belt is not available.
- ★ Avoid costly delays, shut-downs and pickups.
- ★ Eliminates costly dismantling of machinery when re-belting.
- ★ Completely modern make-up units that give you peace of mind as well as stock on hand.
- ★ Less Stretch and Follow-Up Maintenance. Just One Strong Joint.
- ★ Alligator V-Belt Drive Units, available in sizes A, B, C and D. B size furnished in display box.
- ★ Order from your distributor. Ask for Bulletin V-215.

FLEXIBLE STEEL LACING CO.

4699 Lexington St. Chicago 44, Ill.



SIX SIDE-BOOM TRACTORS, lifting in unison, pick up a 270-ft. length of concrete-coated pipe from the timber dock at right and lower it to several dollies on narrow-gage track below. Subsequent sections were then rolled to edge of dock.



END OF SECTION is butt-welded to main line while held in place by end tractor. Joint is then covered with strip of canvas

Marine Pipeline Threaded Under Road



PASSING THROUGH greased steel guide with side rollers, pipe enters 8-ft. dia concrete pipe tube that passes under Highway 101 at Encino, Calif. Note how dollies drop out before entering tube and how angle irons guide them back on rails.

TWO CONTRACTING FIRMS joined forces and brain power recently at Encino, Calif. to put into service a 20-in. dia concrete-coated pipeline which runs out to deep water to receive oil from ocean-going tankers. The 4,200-ft line passes under U. S. Highway 101, continues to the shore line and runs 3,000 ft. out into the water. The entire operation was completed in only 13 hr, from 7 am to 8 pm on the same day.

Fifteen lengths of pipe, each 270 ft. long, were prepared in advance and coated with concrete to provide sufficient weight. These were lined up, one behind another, alongside a ditch which ran down to the shore line, where an earth dike prevented sea water from entering at high tides.

Sections of 8-ft. dia concrete pipe were placed to form a tube under the highway. A narrow-gage rail line ran the length of the ditch, except for the highway section.

Six side-boom tractors picked



sandwiched in between two coats of hot mopping. Electronic holiday detector next tests the joint covering to prevent erosion by sea water. Concrete coating on pipe is mainly for weight.



WOOD STAVES are wired in place over joint as final precaution before pipe is pulled again. Fifteen lengths of pipe were handled thus to place 4,200-ft. line in 13 hr.

and Out to Sea in Only 13 Hours

up the first section and lowered it to the track dollies. The pull line run from a barge out in the water, was threaded through the tube, and pulled the pipe along. Successive sections were picked up, lowered, butt-welded and moved on. As the pipe entered the concrete tube under the roadway, it passed through greased steel guides which took the weight of the line as the dollies fell away into a pit. These were quickly run back on a second set of rails for re-use.

Welded joints were hot-mopped, covered with canvas strips, and hot-mopped again. An electronic detector checked coverage, and joints were covered with wood staves. Three steam winches aboard the barge provided 200 tons of pull, and the forward end of the line rode in a steel skid with buoyancy tubes.

Contractors were Haviside Co., San Francisco, and Pacific Pipeline Construction Co. of Montebello, Calif. Owner was San Diego Gas & Electric Co.



FORWARD END OF LINE rests on steel skid. Three buoys keep end from digging into ocean floor. Two pull lines run to a yoke, from where three run to barge-mounted winches. Note bulldozer removing earth dike previously placed at seaward end of ditch.

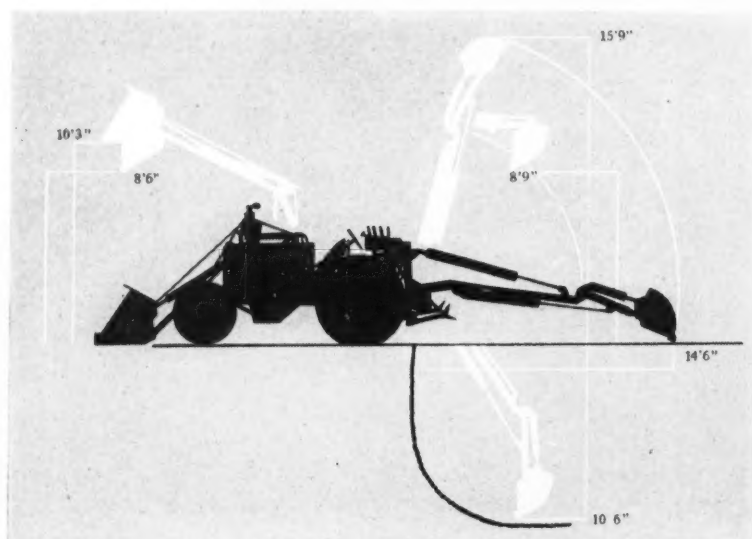


CAPABLE OF DOING any number of loading and digging jobs with both front- and rear-mounted shovels, this Sheppard backhoe

diesel wheel-type tractor is constructed heavy enough to withstand the hard usage of contractor's work.

Sheppard Builds Them Strong, But Makes Them Simple

By RALPH H. LEWIS, Associate Editor



INTERESTING SKETCH shows the positions of both the front-end shovel and rear-mounted backhoe bucket in all positions. The front-end shovel can lift the bucket to discharge height in 12 sec. The backhoe reaches out 14 ft 6 in.

WHAT ABOUT THOSE fuel injection systems for full diesel engines? Have they always been a big mystery to you? Have you heard how in order to operate efficiently they must be built in air-conditioned factories? How close tolerances are a must if the system is to function properly? How even a mere fingerprint on a highly polished surface of a part could cause that part to freeze?

Do you feel fuel systems are complicated, extremely delicate and very, very precise? Well, we believed all these things until we went down to Hanover, Pa., recently and visited the Sheppard diesel plant where they are turning out diesel-powered tractors and power units, and now we're not so sure.

Without any previous experience whatsoever, one screwdriver, a couple of wrenches, and even in our Sunday best suit, we took one of Sheppard's fuel injection systems apart, and put it together again in 45 min. When we got it back in one piece, the doggone thing ran, too! Didn't even have to make any final adjustments. It seemed to run as well as it did before. Our sense of accomplishment was short-lived, however, because R. H. "Bub" Sheppard, the

(Continued on page 112)

ANNOUNCING a new, special-alloy steel cutting edge for bulldozers and scrapers



We are pleased to announce the development of the "Rhino" blade, a new cutting edge . . . precision-machined and rolled in accordance with our exact specifications.

It's another addition to our already full line of top-quality scraper, bulldozer, maintainer, snow plow and other blades for efficient construction

and maintenance of the nation's highways and roads.

The "Rhino" blade will give you rugged, dependable service. The top-quality for which SHUNK blades have been known for almost a century is, naturally, an integral part of this new blade in the Shunk line.

Stocks of the "Rhino" blade will be on hand in all popular sizes. Write us for more information *today*.

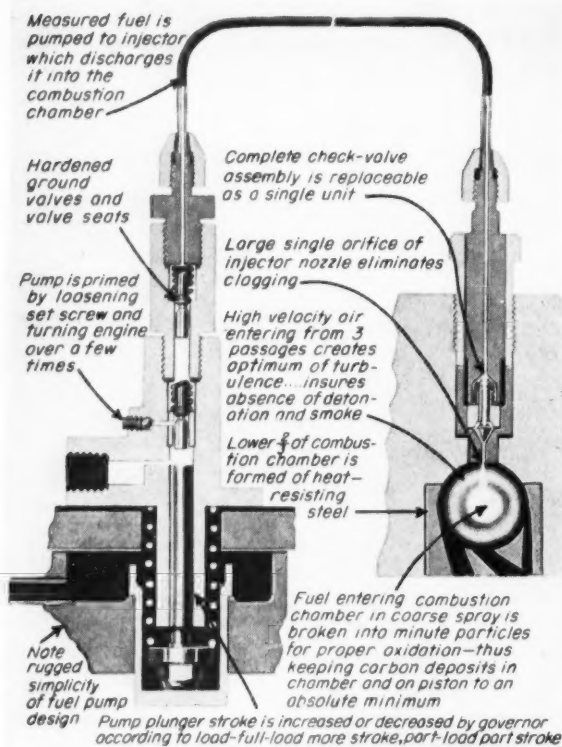


3,000 DIFFERENT SPECIFICATIONS

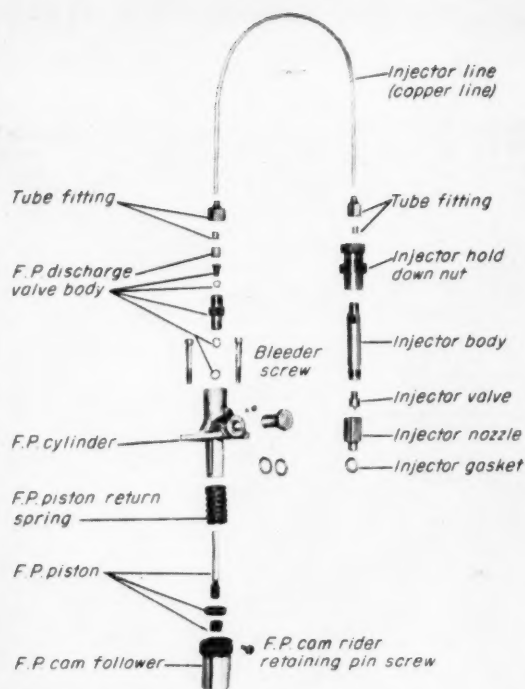
Shunk MANUFACTURING COMPANY
In Our 99th Year

BEST — BLADES — MADE

BUCYRUS, OHIO



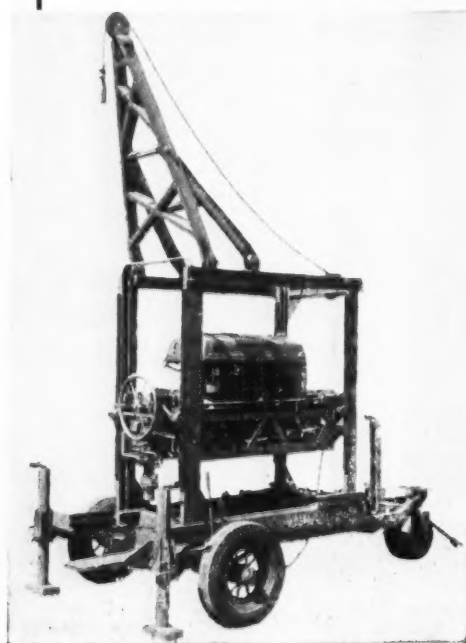
FUEL INJECTION SYSTEM of the Sheppard diesel is a model of simplicity. The entire system was designed and developed by Sheppard and is manufactured in Sheppard's factory in Hanover, Pa. They claim fuel savings as high as 75%.



HERE IS THE WAY the Sheppard fuel injection system looks when it is taken apart. Sheppard claims any average mechanic with a screwdriver and a couple of wrenches can disassemble and put it together in less than an hour.

(Continued on page 114)

5 or 6 INCH AUGERS drill up to 80 feet 4 1/4 INCH AUGERS drill to greater depths



Parmanco

MODEL 51V VERTICAL DRILL

HEAVY DUTY • 4 SPEEDS AND REVERSE

Here is a mobile drilling tool, built around a 40 h.p. Ford motor and to user's conditions and requirements. In use today in many fields, it is speeding and simplifying jobs.

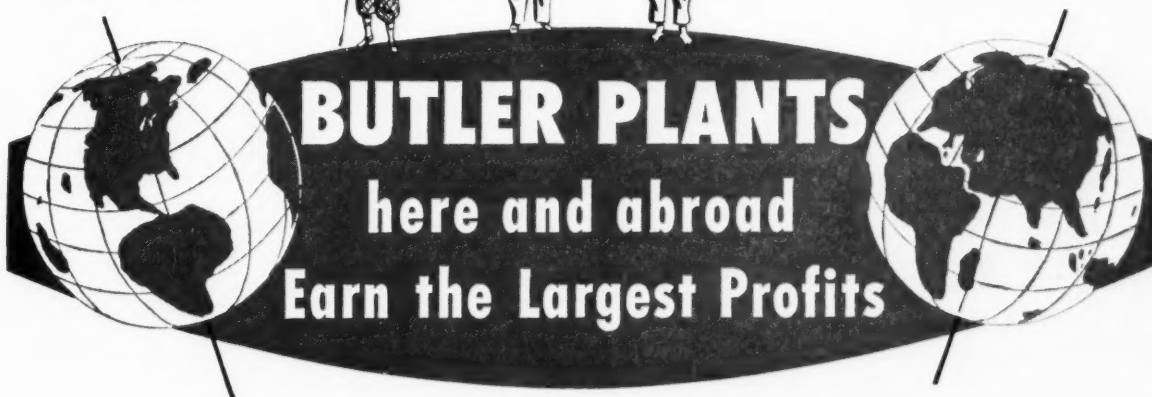
In a recent field test an accurate sample was taken in 30 minutes thru 25 feet of overburden. This was done adjacent to an identical test hole that had taken 8 days to drill and sample by hand.

This Model 51V has four auger rotating speeds and reverse. It has proved its ability to meet the requirements of the general prospecting field where it is not necessary to drill solid limestone.

This machine (Model 51WV) is also built around a Wisconsin 25 h.p. air-cooled motor, 4 speed transmission and self-starter.

PARIS MANUFACTURING CO. PARIS, ILL.

In Dollars, Pounds, Rupees, Pesos or Bolivares —



Contractors with big work — overseas — where many unfamiliar conditions pose problems of profit or loss — depend upon the familiar and friendly BUTLER PLANT for steady and stable concrete production.

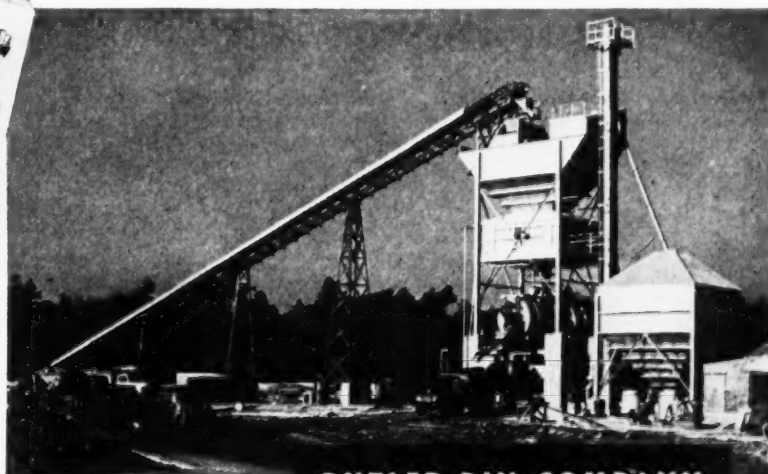
As proof of that confidence, American contractors are operating BUTLER PLANTS from the Arctic to the Latin American Tropics and from Europe to the Orient . . .

Where distance from home puts an unholy cost on replacement parts because of downtime — it is significant that BUTLER PLANTS are the choice.

So, from construction abroad to construction at home; from dams to housing projects; from short highway jobs to turnpikes — there's a BUTLER PLANT to put a better profit in your contract.



TWO FREE BULLETINS — Your choice of one or both! For a complete showing of Ready Mix Plants, ask for Bulletin 185. For detailed description of BUTLER Road-builders' Plants, request Bulletin 205.



BUTLER BIN COMPANY

949 Blackstone Ave.

Waukesha, Wisconsin

designer and manufacturer, said, "Most fellows can do it in less time than you did."

Any Mechanic Can Repair It

The simplified fuel injection system of the Sheppard diesel seems to be the key to the success of this newly developed industrial wheel tractor and power unit. Sheppard claims, and from our personal experience we believe he is right, that his fuel injection system can be serviced or repaired by the average mechanic with just ordinary tools. Certainly, in contrast with other diesel fuel injection systems we have seen, the Sheppard unit is a model of simplicity.

It works like this. This unit squirts instead of sprays fuel. An individual pump serves each cylinder, connecting directly to the injector nozzle. The fuel charge is metered and the injection timing controlled by the pump. The three valves employed in the system are simply check valves—no pressure valves are needed.

Sheppard claims, and is ready to prove it to all comers, that because of the simplified system, his diesel engine will operate on a wider range of mineral and vegetable oils than any other similar type engine. During tests the engine was actually run on 64 different fuels including vegetable and fish oils. "Of course," said Sheppard, "when we ran it on fish oil we had to put a strainer on, but it ran pretty well. As a matter of fact our engine will run on just about anything but gasoline and alcohol.

"Our biggest job seems to be to point out to people that diesel engines and fuel systems need not be complicated affairs. If a person can forget this, he will soon find out the Sheppard diesel is just as easy to repair and keep running as any other type of engine."

Navy Likes Sheppard Engines

Certainly there is no mystery about diesel engines to 41-yr-old Sheppard, who is president of this small but progressive organization. He built his first diesel while still in college in 1935. The Sheppard organization has been building them simple and strong ever since. They must be strong because the U. S. Navy recently tested a Sheppard diesel power unit and gave it a series of 90G impact blows and it emerged with flying colors. The Navy must be satisfied with the Sheppard units because they buy and use a lot of them.



FRONT-END SHOVEL, available in either $\frac{5}{8}$ - or $\frac{3}{4}$ -cu yd size can handle loads up to 5,000 lb. It will reach out 5 ft 10 in. and up as high as 10 ft 3 in.



IF THE OWNER wants to bulldoze, the front-end shovel is easily removed, and a combination front-mounted blade can be attached in either 5-ft 6-in. or 6-ft 6-in. lengths.

The name Sheppard is no stranger to industry. Since its introduction back in 1940, Sheppard has increased his line of engines and rubber-tired tractors until they now offer some 40 different models. Power units and tractors produced vary from $3\frac{1}{2}$ to 112 hp. Fuel economy with savings claimed to be as high as 75% have been the chief reason for the Sheppard success in the farm field, but also a very important factor has been the ability of the tractor to "take it."

Sheppard and Sales Manager Dick Coons felt that their farm tractor with a few changes could be made into a diesel unit that would have a ready acceptance in the industrial field. They reasoned and proved it by a survey, that small contractors could profitably

use a diesel tractor of this type with attachments. After carefully checking with contractors, they decided 3 yr ago that the most wanted attachment would be a front-end loader.

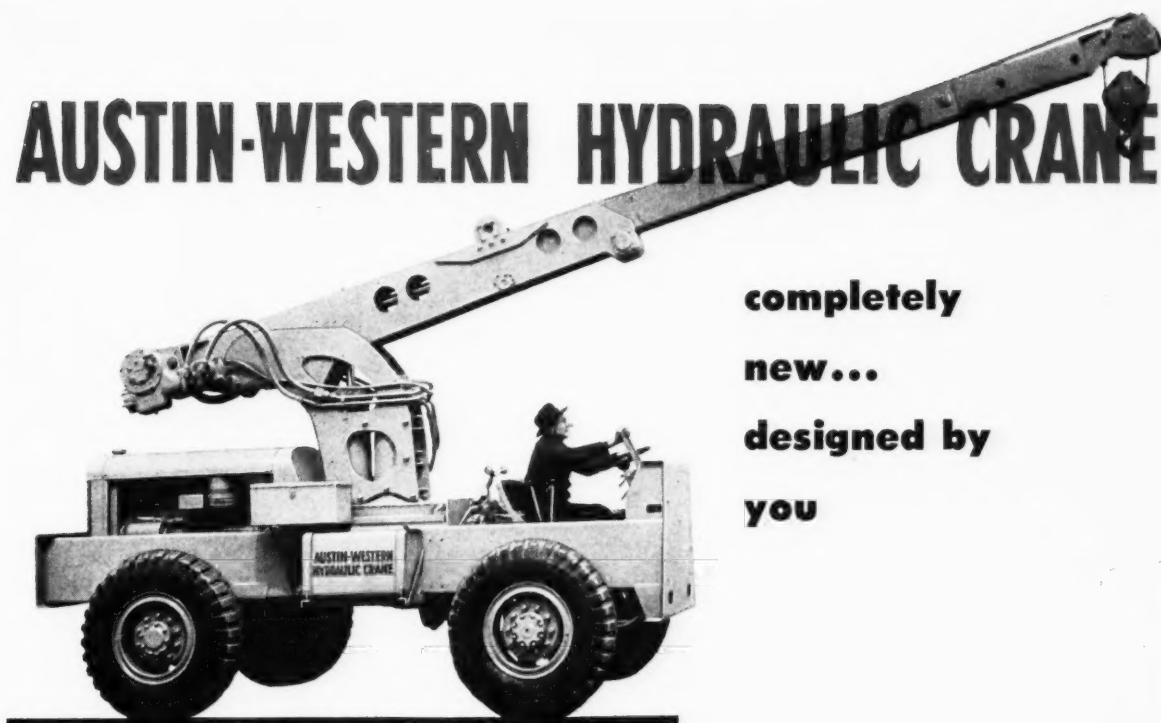
Using the most popular model tractor, the SD-3, which uses a 50-hp engine, they redesigned it, putting on new and stronger axles, bigger tires, bigger and stronger clutch, and made the entire unit heavier.

Uses Lull Front-End Loader

The first attachment added was a standard Lull front-end loader which they made available in a $\frac{5}{8}$ - and $\frac{3}{4}$ -cu yd size. It was tested in the field for a period of eight months. This unit has proved to be

(Continued on page 117)

AUSTIN-WESTERN HYDRAULIC CRANE



**completely
new...
designed by
you**

the crane of unlimited indoor-outdoor use



Designed only after making a complete analysis of your crane requirements—here is TOMORROW'S answer to TODAY'S materials handling problems.

Completely hydraulically operated including

- Continuous 360° turntable rotations
- Extension and retraction of the boom
- Raising and lowering of the cable
- Boom elevation

This amazing, new, self-propelled Hydraulic Crane, with its pickup, carrying and placement capabilities combines the best features of crawler, truck and erection cranes with those of industrial shop cranes . . . and, like all other Austin-Western products, it's "Built to Outperform".

Send for additional information NOW.

AUSTIN-WESTERN COMPANY

Construction Equipment Division • Baldwin-Lima-Hamilton Corporation

AURORA, ILLINOIS, U.S.A.

Power Graders • Motor Sweepers
Road Rollers • Hydraulic Cranes

AUSTIN-WESTERN COMPANY

607 Farnsworth Avenue, Aurora, Illinois

Please send complete information and literature on the Austin-Western Hydraulic Crane.

Name

Title

Company

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City Zone State

Other products: Power Graders, Motor Sweepers, Road Rollers

SMITH-MOBILE

*New De Luxe
MODEL*



Best Buy...Here's Why:

- Completely Redesigned for Greater Efficiency than Ever Before
- Better Weight Distribution Allows Bigger Legal Payloads
- Gross Weight Cut Nearly 800 lbs.
- Overall Length Much Shorter
- Most Accessible Engine on Any Truck Mixer
- Two-Speed Transmission Built to Aircraft Specifications
- No Increase in Price, in Spite of Greatly Increased Quality

You Add Them Up...They Equal
The BEST TRUCK MIXER

You Can Buy Today!



Note handy location of mixer engine.
Every working part is easily accessible.



THE T. L. SMITH COMPANY
2851 North 32nd Street • Milwaukee 45, Wisconsin, U. S. A.
Affiliated with ESSICK MANUFACTURING CO., Los Angeles, Calif.

CONCRETE MIXERS

For **BIGGER** and **BETTER** Concrete Mixers and Truck Mixers . . . **LOOK TO SMITH**



BACKHOE IS FULLY HYDRAULIC in operation. It can dig down to 9 ft 10 in. and discharge loads as high as 10 ft. It can also be equipped with a rear-mounted shovel.

a real producer. It has a peak lifting capacity of 5,000 lb, and during tests has actually lifted as much as 7,000 lb with no apparent damage. The normal shocks, stresses and strains of front-end loader work are absorbed by the rugged construction of the Sheppard tractor. The lifting height of the bucket is 10 ft 3 in., and the dumping

height can be reached in a short 12 sec. The bucket will reach out 5 ft 10 in. A special hydraulic feature of this rig enables the operator to shake the material bucket clean. Over-all height is 6 ft 1 in. and the over-all length is 18 ft 7 in. The tractor-loader unit has eight forward speed transmissions and two reverse. Its speeds are

from 1.5 to 10.5 mph. This combination loader-tractor, according to the manufacturer, is said to have 66% more lifting power and a lower cost per lb than comparable units. It can be obtained with seven material-handling tools. The bucket can be quickly removed and a bulldozer blade attached. As is, the tractor-loader rig weighs 10,604 lb and sells for \$6,095 fob Hanover.

Adds Backhoe Digger

Sheppard just about had all the bugs out of the tractor-loader rig, when requests began coming in from the small contractors to add a backhoe and shovel on the rear of the tractor. They pointed out, the tractor was rugged enough to handle the extra attachment and convinced Sheppard it would increase the versatility of the unit. The men in the field pointed out by attaching a rear-mounted digger, together with a front-mounted loader, it would enable one operator to do practically any kind of digging, loading or trenching job using just one machine. It was

(Continued on page 121)

HOPKINS VOLCANIC UNITS

Help Set "Fireball" Pace on New Jersey Turnpike Project

The 118-mile New Jersey Turnpike is the biggest paving project of its type in the world, and the longest asphalt-concrete job ever undertaken on so short a schedule. With only 5 months actual working time, and tough specs to meet, a terrific production schedule had to be maintained. So, to supply concrete for Sections 3 and 4, four huge asphalt plants were erected at Cranbury. Sitting side by side, each plant turned out 2-ton loads every minute. That's 8 tons a minute, or almost 500 tons per hour . . . a really "fireball" pace!

The four asphalt plants were all equipped with Hopkins Volcanic Dryer Units, and Mr. John McGarry, Vice President of the Tioga Construction Company, later wrote us as follows: "We were producing 25,000 tons of asphalt paving material a week. We found the Hopkins equipment does its assignment efficiently and with a minimum of maintenance."

Contractors throughout the country are setting new production records, and cutting costs, with Hopkins Volcanic Units. Want to know more? Your letter or phone call will bring descriptive literature, complete details, and follow-up by a Hopkins representative.

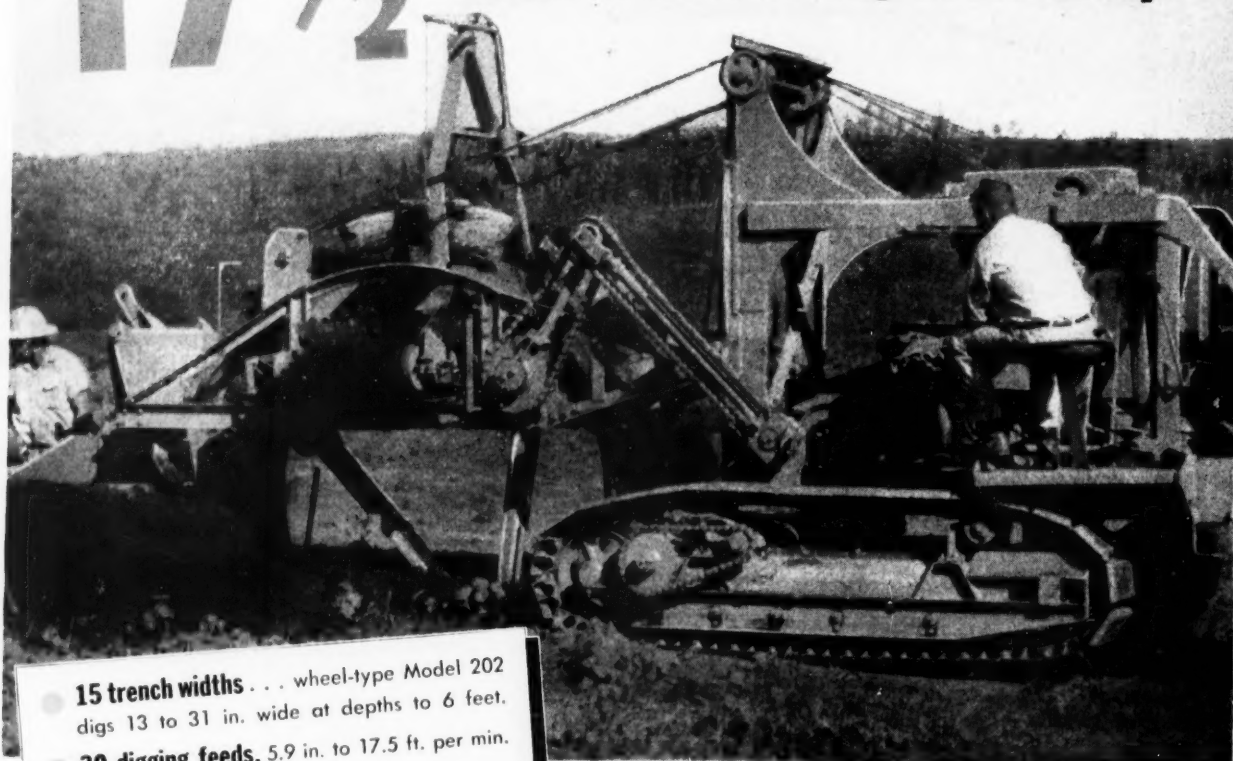


HOPKINS VOLCANIC SPECIALTIES, INC.
ALLIANCE, OHIO

17 1/2

FEET PER MINUTE

13 to 31 in. wide...up to 6 ft. deep



- **15 trench widths** . . . wheel-type Model 202 digs 13 to 31 in. wide at depths to 6 feet.
- **30 digging feeds**, 5.9 in. to 17.5 ft. per min.
- **Enclosed friction clutches** accurately control wheel depth for precision grading.
- **Dual-purpose** friction-type clutch drives digging wheel . . . protects against shock loads.
- **Digging wheel truck-rollers** are all fully equipped with antifriction bearings.
- **Quick-change bucket fronts** have cutting lips, or easy-in, easy-out "Tap-In" teeth.
- **Shiftable, reversible** belt conveyor discharges spoil to either side of machine.
- **Full crawler mounting** . . . 16 or 20-inch treads . . . only 6 or 5 lbs. PSI pressure.

Send to: **PARSONS COMPANY, NEWTON, IOWA**
for specifications, price information on 202 Trenchliner.

NAME _____

COMPANY _____
CM STREET _____

CITY, STATE _____

☐ Also send details on pipeline Model 215.



PARSONS wheel-type 202 Trenchliner combines big work capacity with precision grading accuracy. Wide range of digging feeds, widths and depths fits special requirements of municipal and utility trenching . . . farm, airport, highway drain-tile jobs . . . irrigation ditching . . . oil, gas, gasoline transmission lines, etc.

Specified grades are easy to maintain because digging wheel responds instantly to sensitive friction-clutch control. Arched wheel frame, rigidly trussed, and three double-wheeled guide rollers keep digging wheel precision aligned. Hinged crumber sweeps trench bottom clean, ready for pipe. Tile-laying box and chute (optional) saves time, labor on drainage jobs.

For full details on this big-production 202 Trenchliner, see your Parsons distributor, or write us.

PARSONS COMPANY
NEWTON, IOWA
(Koehring Subsidiary)

6 TRENCHLINER models: 2 wheel-types, 3 ladder-types full crawler mounted, and utility-size Trenchmobile® on rubber.

with PARSONS 202 wheel-type TRENCHLINER®



▲ FOR CROSS-COUNTRY TRENCHING

... here's another Parsons wheel-type Trenchliner ... pipeline Model 215. It has 6 digging wheel speeds up to 11.2 r.p.m. ... choice of square or round-bottom buckets ... standard tractor-type crawlers with 18" treads, lug-type shoes ... standard 55 h.p. diesel engine.

LOAD 1500 LBS. in Kwik-Mix Moto-Bug®

This low-cost power wheelbarrow, with 10 cu. ft. (struck) hopper, has a 1500-lb. load-carrying capacity ... climbs 20% ramps fully loaded with operator riding on rear step. Hopper has instant gravity dump with snub-line control. There's full power forward and reverse ... no push, no pull necessary. 3.6-to-1 gear ratio on large steering wheel gives effortless maneuvering. Interchangeable units: flat bed, 5-foot fork lift, scraper.

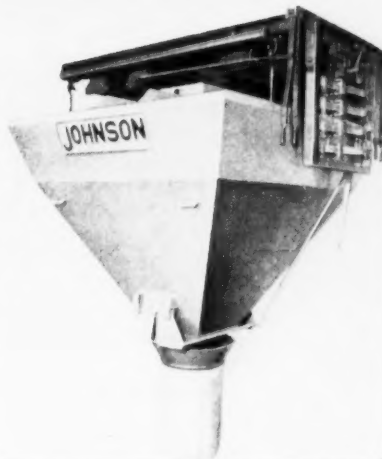
KWIK-MIX (Koehring
Subsidiary)
Port Washington, Wis.



2, 3 or 4-material Johnson "Hi-Speed" Batchers

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MORE WORK-TIME with Koehring HALF-YARD

There's no time-out for continuous manual clutch adjustments ... no "compromise" settings with this Koehring heavy duty 1/2-yard. All main clutches are self-adjusting ... heat-compensator springs make tension changes automatically. This maintains big yardage performance with shovel, hoe and dragline, is equally important on intermittent usage of crane and clam-shell work. 3 larger sizes up to 2 1/2 yds., cranes to 79 1/2 tons.

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SOIL COMPACTION!
2. MAXIMUM OUTPUT!

Says **JACK PRINCE**
WESTWAY EXCAVATING CO.
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"BARCO'S PERFORMANCE is remarkable!" writes Jack Prince, Owner of Westway Excavating Co. in California. "We used the Rammer on two engineered fills recently and got maximum results for both density and volume. The material was decomposed granite with a slight clay content. Our requirements were for 125 pounds per cubic foot, dry density. That is real compaction! We compared the Rammer with two other tampers and were really amazed at how much more material the Barco handled."

"Since people in heavy construction have become aware of the necessity for good compaction on all subgrades, it certainly behooves any contractor to check the output of the Barco Rammer."

If you are not already using the Barco Rammer for soil compaction work, find out about it today! Worldwide Sales and Service. BARCO MANUFACTURING COMPANY, 512L Hough St., Barrington, Illinois. (Near Chicago)

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SHEPPARD DIESEL ...

Continued from page 117



ON OPERATIONS off the rear of the tractor, two stabilizers are used to keep tractor from crawling. They are mechanically operated.

good logic so Sheppard went to work adapting a backhoe digger to the tractor.

When the engineering work was completed the rig slightly resembled a Rube Goldberg unit, but it did the jobs and showed amazing stability. With both the front-end loader and the backhoe attachment, the rig can negotiate over rough terrain and open ditches without any objectionable swing and sway with no inclination to tip.

On the backhoe attachment, the boom swings horizontally in a full 180-deg arc with the tractor acting as a counterweight. Hydraulically controlled with four levers, the attachment has a 25% overload safety factor. All controls are double acting with no clutches, drums or brakes to worry about. The boom, dipper stick, and swing operate from an independent hydraulic system which is driven from a power take-off on the tractor. The seat is adjustable up and down and swivels 360 deg, which provides good visibility and operator comfort.

The backhoe will dig down as much as 10 ft, has a 14-ft 6-in. reach and a trenching capacity of 60 ft, 6 ft deep per hr. The bucket has six to eight cutting teeth, enclosed or skeleton types, and is available in five sizes with widths from 16 to 24 in. It is fully hydraulic in operation. Direct connected, double-acting top cylinder forces the bucket into the ground, assures full bucket load every time. Capacities are from 2.92 to 4.53 cu ft.

The back shovel can load or ex-



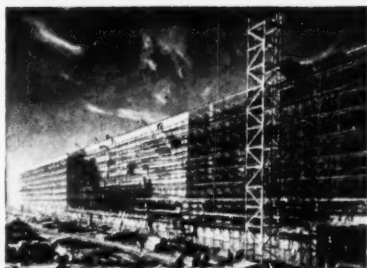
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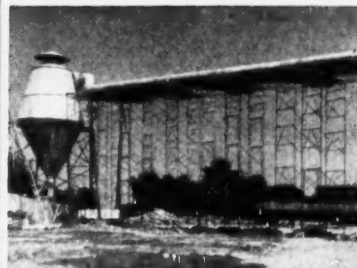
You can secure more facts by contacting one of the 137 Safway dealers near you. Or write for the fact-packed Safway bulletin. It's free.

Another Texas tall tale



It took just a year after breaking ground to deliver the first bomber at this Texas bomber plant. Miles of Safway scaffolding helped to speed the construction work.

Moving a dust collector

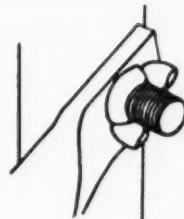


How would you move this dust collector when dumping space is filled? Easy! Support it with easy-to-assemble-and-dismantle Safway steel scaffolding.

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Masons, carpenters, painters use safe, strong Safway scaffolding in home construction. Low in original cost, Safway's durable construction saves on long-run costs as well.



Trouble-free wing nuts solidly join tubular steel cross braces to end frames. Cross braces pivot on hardened-steel Hi-Shear rivets. All parts are corrosion and weather resistant.



SAFWAY

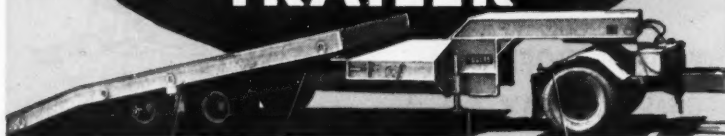
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SHEPPARD DIESEL ... Continued

cavate 15 to 30 yd per hr and has six to eight cutting teeth, in five sizes with widths from 16 to 24 in. and capacities from 2.74 to 4.22 cu ft. It will lift more than 2,000 lb. Hydraulic by-pass valves prevent overloading or damage.

The backhoe and shovel attachments are easily interchanged by removing only three bolts. It weighs 7,560 lb, sells for \$6,606 fob. The tractor-loader backhoe combination weighs 11,400 lb and sells for \$8,476.

We think you'll be pleasantly surprised when you see this rig perform. With all the equipment overhanging the tractor you get the impression it is overloaded—that the engine will really have to pull or strain to handle all the attachments. However, the engine lugs normally. There appears to be some tire flexing when working off the rear of the tractor, but it is not serious as Sheppard has had no claims or service problems from the field.

One thing for sure, this rig is no toy. It's rugged and will really produce from both front and rear ends. The small contractor, who has the need for a versatile tool of this nature will do well to investigate this rig. It's a tool that's never been mass produced, but is being manufactured by a small group of master craftsmen, many of whom have been with Sheppard since his start and no longer need to be reminded to "Build them strong, but make them simple."

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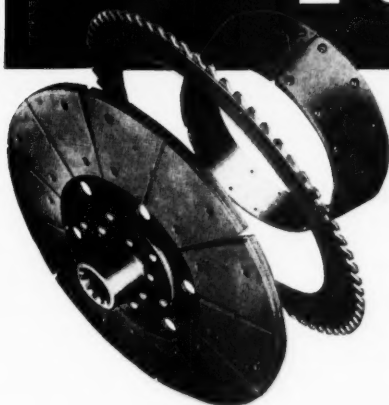
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SECTION OF TUNNEL on Capitol Hill, Washington, D. C., is complete and shows the duplicate steam lines up to 16 in. in dia the 8-in. condensate return line and the two 30-in. chilled water lines that will supply the various buildings.

Long Capitol Tunnel Nears Completion

A MAJOR UNDERGROUND PROJECT, part of one of the biggest modernization jobs on Capitol Hill in Washington, D. C., is now in the final stages of construction and soon will accommodate new utility systems for public buildings located on the historic ground.

The project has developed considerable interest because of the varied types of construction methods and engineering problems involved in building a reinforced concrete tunnel.

The main tunnel is approximately 10 ft 6 in. inside dia, approxi-

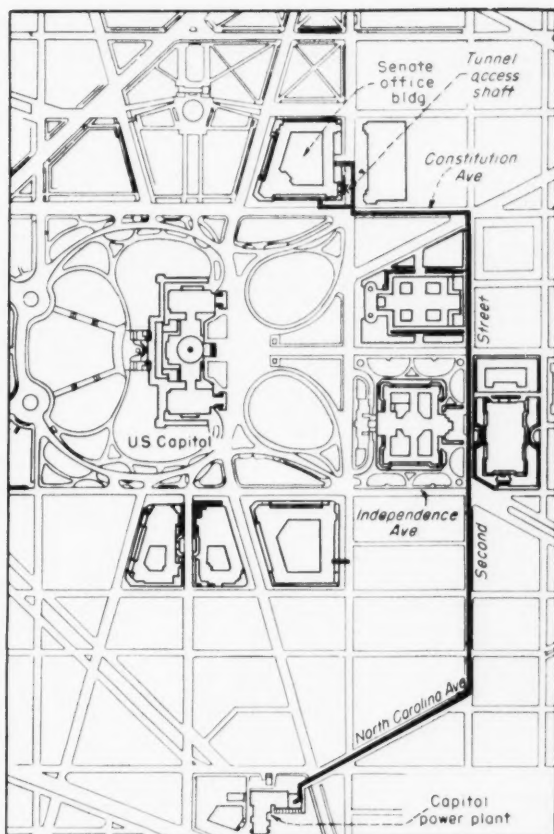
mately 5,600 ft long and has open cuts as much as 43 ft deep. Generally, three basic methods of construction were required: (1) the driven tunnel; (2) the narrow trench tunnel; and (3) the wide trench tunnel.

The work is being constructed under an appropriation for Capitol Power Plant Changes and Improvements under the direction of David Lynn, Architect of the Capitol. Plans and specifications were prepared by Walter L. Rubel, vice-president of Guy B. Panero, consulting engineer of New York and

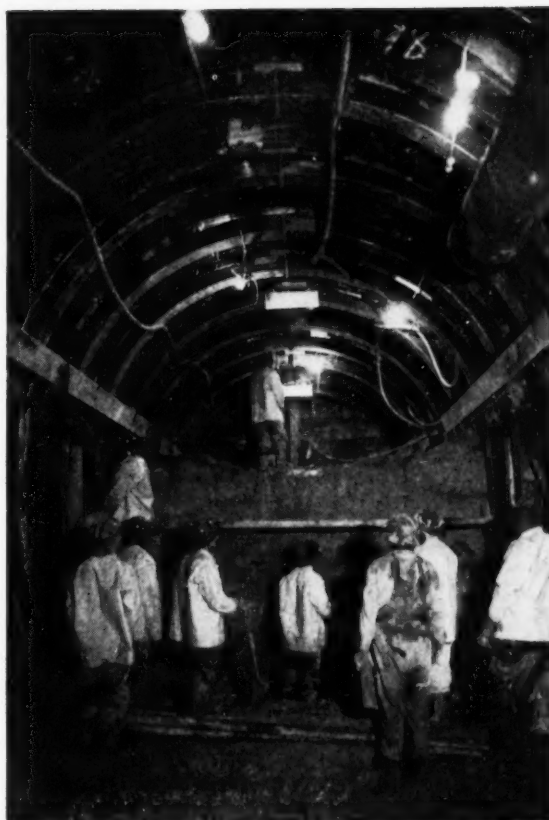
Washington.

The contractor is Chas. H. Tompkins Co., of Washington, D. C., who has the job of excavation and back-filling for the open-cut sections of the tunnel, excavation of the driven tunnel section, the furnishing and placing of tunnel liners, construction of the rectangular-shaped concrete tunnel in the open cut, furnishing and installation inside the tunnel of duplicate steam lines up to 16 in. in dia, and 8-in. condensate return line, two 30-in. chilled water lines and appurtenant work.

Here are the details of construc-



MAP SHOWS the route of the 6,000-ft tunnel which will extend from the Capitol power plant at E Street and New Jersey Avenue to the Senate Office building.



THREE BASIC METHODS of tunnel construction are being used on the project by local contractor Chas. H. Tompkins Co. This view shows a section of the driven tunnel.



ON THE OPEN-CUT TUNNEL the excavation was carried wide enough to permit forming both sides of the tunnel walls. The concrete was placed through hoppers and elephant trunks.



SOLDIER BEAMS are driven at center-to-center spacing in this type of tunnel. Both tunnel walls were formed and the concrete poured directly against the oak breast boards.



16-IN. POWER-DRIVEN EARTH AUGER bored vertical holes for alignment and freedom from obstructions. Then flange H-beams were driven to a safe depth below subgrade.

tion of three different types of tunnel construction as furnished by Francis M. Tompkins.

Driven Tunnel Section—450 ft Long

The existence of a maze of utility installations in First St., N.E., required the depth of the tunnel to be more than 35 ft below the surface grade in order to get under these utility installations. This fact, coupled with the proximity of the railroad tunnel leading into the Union Station, and a projected pedestrian tunnel which will be built from the old Senate Office Building to the new Senate Office Building, when the new Senate Office Building is built, necessitated the construction of this section of the tunnel by driven tunnel methods.

From the tunnel access shaft at First St. and Constitution Ave., extending north on the east side of First St., and thence across First St. to the middle of the Senate Office Building, the tunnel has been driven by hand mucking, utilizing Commercial Shearing & Stamping Co. liner plates and 13 lb, 6-in. I-beams prefabricated to

(Continued on page 128)

GET FAST DUAL PRIMING—
DEPENDABLE LONG LIFE OPERATION—
and **KING SIZE** in **VALUE!**



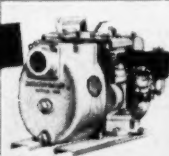
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Completely New Dual Prime Pump Line Featuring

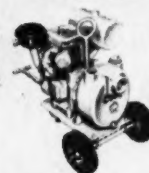
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4-WHEEL DRIVE

Shovel loader

WORKS where other Loaders FAIL!



■ This powerful new Shovel loader is designed and built for **HEAVY** work under the toughest conditions. Outstanding features—many of them exclusive—permit top capacity performance in extremely rough terrain, where other units falter and fail . . . Power from the heavy-duty gas or diesel engine is applied through positive 4-wheel drive, 5-speed transmission, forward and reverse . . . Positive 25" downcrowd, bucket width completely covering wheel tread, and operator control of tilt in any position, provide maximum digging and stripping effectiveness. Operator's position insures maximum visibility and safety.

Equipped with 1 1/2 cu. yd. bucket as standard. Also available: 1 1/4 yard heavy duty and 2 1/2 yard light material buckets, pallet forks, backfill blades and crane hook attachments.

Write for eight-page illustrated Bulletin AD-55, containing complete description and specifications.

1. Rear axle oscillates 23" about longitudinal axis for maximum ground pressure on all four wheels at all times. Hi-flotation type tires permit operation in soft or rough ground.

2. Positive 4-wheel, 5-speed transmission, and 100-inch wheelbase enable unit to negotiate steep earth banks, ramps or obstructions. Hydraulic power steer. Front or rear wheel steer optional. 4-wheel steer available.

3. 3 to 1 Planetary gear reduction in each of four wheels reduces torque 300% in axle shafts, gear case and drive shaft to prevent axle and drive line failure. 4 Planetary gears distribute load evenly to wheel ring gears.

4. Unobstructed visibility enabling operator to see bucket in lowered position, increases safety and performance. Hydraulic arm-type loader has parallelogram action, with position lift and tilt controls.



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BUCH #155 The BUCH 155 is designed to carry more... yet go through narrow doorways. Famous BUCH quality construction means more wear, lower cost on the job. Yet BUCH barrows cost no more. Also available with non-corrosive aluminum tray. Send for leaflet showing Buch Contractors' Barrows.



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CAPITOL TUNNEL . . .

Continued from page 126

form a horseshoe section. The flying arch method of tunneling was utilized, keeping the top heading advanced about 10 or 15 ft ahead of the bottom excavation.

As soon as the floor slab was poured, placing of the reinforcing steel of the wall and roof slab and then the wall forms for the interior of the tunnel followed. The architects-engineers' design called for a rectangular interior tunnel section. The structural roof slab, therefore, was finished off as a flat slab with the designed 3,000-lb strength concrete 14 to 15½ in. thick.

As the tunnel was driven and final floor grading completed, a 6-in. I-beam was placed longitudinally about 3 ft above subgrade and bolted to the ribs. Timber struts then were set to hold the ribs apart while reinforcing steel for the floor slab was placed and concrete poured.

The inside dimensions of the driven tunnel section are approximately 8 ft wide by 9 ft high. The floor slab thickness is 17½ in. at the walls and 16 in. at the center, thus providing a slope of 1½ in. for drainage to the center. The wall thickness is a minimum of 14 in. and the tunnel roof slab thickness is 15½ in. at the center and 14 in. at the walls, also providing a slope of 1½ in. for roof drainage, the same as in the open cuts.

Inside, 2x8-ft Atlas speed forms are used to make up a complete wall tunnel for the full height. Pumpcrete methods were used for placing all concrete, including lean concrete fill placed later to close the entire void above the top of the structural roof slab, again utilizing the horseshoe-shaped top portion of the liner plates as the outside form.

Narrow Trench Tunnel— 3,113 ft long

As certain portions of the open cut tunnel had to be constructed in immediate proximity to many utilities, it was determined most feasible to excavate closely and carefully to the designed outside dimensions of the tunnel section. Where these exacting conditions were not present, excavation was carried wide enough to permit forming both sides of the tunnel walls.

In excavating, forming and concreting the narrow trench tunnel, 10- or 12-in. wide flange H-beams (soldier beams) are driven a safe

(Continued on page 131)



**OPERATING
COSTS**

**CUT
62%**

WITH A CAT* DIESEL

In 1950, Fisher Contracting Co., Phoenix, Ariz., purchased a 500-cu.-ft. Gardner-Denver air compressor with a powerful Caterpillar D13000 Diesel Engine.

Has it paid off? Listen!

Operating costs have decreased 62% from \$2.34 per hour to 90 cents per hour, in comparison with the gasoline-powered compressor formerly used. That means almost \$65 per five-day week in fuel savings alone! Little wonder the company is impressed with the engine's "savings" and "dependability."

Of course, the savings came as no surprise to this economy-wise contractor. The company long ago decided it could compound the usual savings on individual Cat equipment by standardizing. Three shovels, four compressors, two generators and a crushing plant are powered by Caterpillar Diesels. The Arizona firm also operates six D8s, two D6s, and five Caterpillar Motor Graders.

With Caterpillar equipment, there's savings in num-

bers. Operators and mechanics do a better, faster job by becoming familiar with one make of machinery. Parts inventory can be held to a minimum. And you get quick, reliable one-stop service from *one* dealer—24 hours a day.

Let your Caterpillar Dealer prove to you the profit in standardizing. You name the date; he'll be ready.

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FOR HIGH-PROFIT
PRODUCTION**

when it comes to **SCAFFOLDING** come to

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Look at this ingenious "Sur-Lok" hinged pin—exclusive with "Trouble Saver". It's simple, fast, and easy to use. It just slips through the bottom of the frame leg—safely locks upper and lower frames to prevent "lifting". It's one of the many reasons why "Trouble Saver" Sectional Scaffolding will serve you better. . . . Write today for free Bulletin PSS-24.

This hinged pin makes "TROUBLE SAVER" Sectional Scaffolding safer and stronger

"Trouble Saver" is the trademark of a *type* of Scaffolding which we distribute. But, more than that—it's a brief description of the product. It *does* save trouble, because it's prefabricated. Saving trouble, it saves time. Saving time, it saves money. And there you have it! The reason *why* more contractors specify "Trouble Saver" Scaffolding year after year. Approved by Underwriters' Laboratories, Inc.

There **IS** a reason — and it's not hard to understand. Only PS has the *right* scaffolding for every job, big or little. That's why, if you want the best equipment for any job, you should join the thousands of contractors and sub-contractors who — *when it comes to scaffolding, come to PS.*

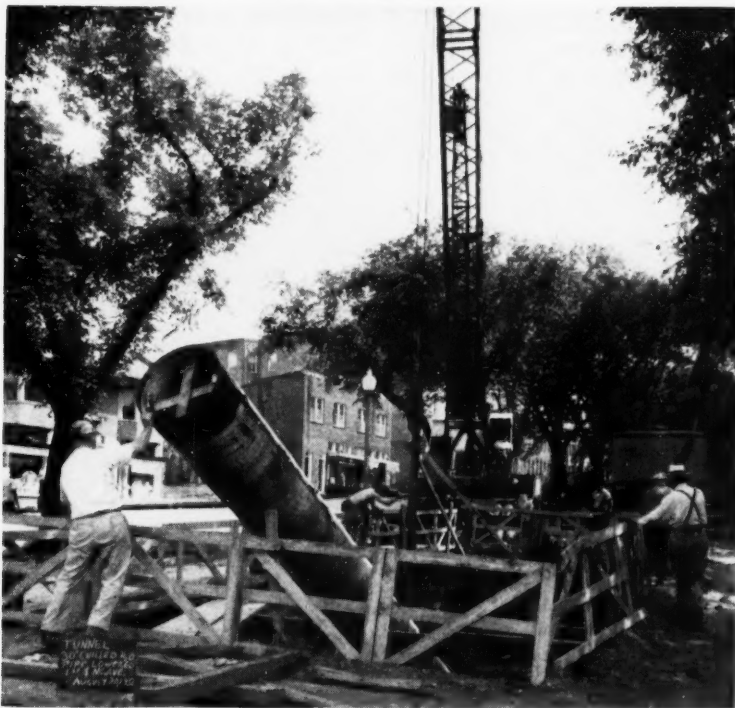
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HERE IS A 30-in. chilled water line being fed through an access opening which was made near the Senate Office Building. The tunnel is a \$5,000,000 project.

depth below subgrade; a 16-in. power-driven earth auger having previously bored vertical holes to assure alignment and freedom from obstruction by any unforeseen underground utility.

The center-to-center spacing of soldier beams varies from 9 ft for minimum depth of 22 ft to 6 ft 9 in. for depths more than 34 ft. As excavation progresses 3- or 4-in. oak breast boards cut to proper length to enable insertion between the web of the soldier beams and to provide bearing on the flange of the soldier beams are placed as the face of the excavation is trimmed.

After reinforcing steel for the floor slab is in position for approximately 125-ft sections (this being the distance between expansion joints) concrete is placed through hoppers and elephant trunks. Reinforcing steel for the walls is next set in position, after which concrete for the 14-in. thick main tunnel walls is poured against the breast boards. Where underground water was encountered, tile sub-drains and gravel were installed in the subgrade adjacent to the sheeting. Corrugated metal sheets

(Continued on page 132)

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Introduce **3** NEW PRODUCTS



RED STAR THOROLOK

Intended for asbestos shingles, on roof or exterior walls of your home or other building. THOROLOK is prepared in six beautiful pastel colors. Ask for Color Card 32-C.



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INVISIBLE THOROCLEAR

Clear, water-repellent material for porous brick, stone, concrete, stucco, asbestos siding and shingles, interior plaster and masonry surfaces, where texture and color are to be retained.

NEW PROTECTION

With addition of three newly-tested products to The THORO System, any type surface such as steel, wood, asbestos siding and shingles and every type masonry and stucco can be protected from excessive weathering, caused by rain and changing temperatures.

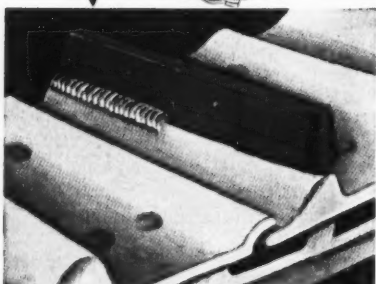
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Weld Marquette Tractor Strip to your worn grousers to restore pulling power, reduce wear on the track, haul more pay loads per day. Marquette TractorStrip is made of special wear-resistant steel . . . pre-formed for easy, efficient welding to the grouser edge. Available in random-length bars of 10 to 14 feet, or cut to your specifications. For complete information, ask your jobber . . . or write to Marquette Manufacturing Co., 307 E. Hennepin Avenue, Minneapolis 14, Minnesota.



MARQUETTE

Tractor Strip

MARQUETTE MANUFACTURING CO., INC.

307 E. Hennepin Avenue, Minneapolis 14, Minn.

CAPITOL TUNNEL . . .

Continued from page 131

were nailed to the breast boards with the corrugations running vertically to carry the water down the face of the sheeting to the drain, thereby preventing excess water from getting into the concrete.

Only inside wall forms can be used in the narrow trench, and these are braced to the opposite inside wall forms. Both walls are concreted simultaneously, keeping the height of concrete in the forms approximately even on each side in order to equalize the pressure.

As in placing the floor slab, walls are poured in sections of approximately 125 ft at a time. The 2x8-ft metal panels are built up into an assembly 8 ft long by a full height wall panel weighing about 900 lb. are stripped and moved into their own position by specially constructed dollies. Fourteen days later the top slab is placed and backfilling is begun and then the soldier beams are pulled by a Vulcan 400 steam extractor.

Wide Trench Tunnel—2,075 ft Long

Open-cut tunnel excavation methods were adopted in constructing the wide trench-type tunnel. As in the other sections, soldier beams are driven at center to center, spacing varying with the depth of excavation; breast boards are placed as excavation progresses. In constructing this type of tunnel, however, both faces of both tunnel walls were formed, in contrast with the narrow trench-type wherein concrete is placed directly against the breast boards. This was a specification requirement wherever feasible.

Unusual aspects of the work have been the heavy and complicated traffic conditions attending the project and the mass of underground utilities of all sorts and descriptions. Gas and water mains up to 36 in. had to be relocated, about 450 ft of a new sewer had to be laid directly below an existing sewer requiring a driven tunnel.

Special provisions for maintaining street traffic by bridging the cuts and decking the streets, and supporting car tracks, had to be carried out on several of the busy street intersections. The comprehensive problems of all utility relocations are solved with the helpful and closest possible cooperation on the part of officials of the various private utility companies and

(Continued on page 134)



It's a pretty long time when you apply it to the use of a Welding Torch. It means thousands and thousands of hours of use. Have you heard about the *Lifelong Guarantee* of Smith's Welding Equipment? Want to know more about it and what that kind of service can mean to you?

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a handy
"package!"



Easy to move because it's balanced. Doors of this portable Electric Plant open for operation. Entire weatherproof housing is quickly removable for servicing. Gas tank is underneath for extra safety. Dependable "U.S." unit is D.C. for battery charging or operating portable tools. Available also in A.C. "U.S." builds the world's most complete line. Write for information, briefly stating your requirements.

UNITED STATES
MOTORS CORP.

420 Nebraska St.
Oshkosh, Wis.



Homoflex Hose—More use per dollar

Homoflex Hose—More use per dollar

Homoflex Hose—More use per dollar

Homoflex Hose—More use per dollar

Homoflex Hose—More use per dollar



FLEXIBLE, LIGHT, BUT RUGGED AND STRONG . . . Yes, you save money because Homoflex lasts longer. It's easier to coil and uncoil . . . no pre-set twist . . . no kinking . . . easier to carry and drag. "Flexible as a Rope". Workmen like it. Cover and tube are inseparable and hosewall is strong and safe, for handling air, water, other fluids and gases. Ask the R/M distributor for Bulletin 6879. He'll tell you about other R/M hose types for steam, oil, suction, chemicals—from small 1/4" size, to huge dredging hose big enough for a man to crawl through . . . also how you get MORE USE PER DOLLAR with R/M transmission, and conveyor belt, and V-belts.



MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Flat Belts



V-Belts



Conveyor Belts



Hose



Roll Covering



Tank Lining



Abrasive Wheels

Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings • Asbestos Textiles • Teflon Products • Packings • Sintered Metal Parts • Bowling Balls



Win one (or two)

Disston Chain Saws plus one (or two) Big Cash Prizes!

Think of it! All you need do is suggest a name for either the Disston DA-211 Chain Saw, or the Disston DO-101 Chain Saw, or both . . . just get your dealer to demonstrate for you . . . then tell in ten words or less why you chose that name—and you stand to win in Disston's great new DOUBLE contest! And look at this DOUBLE list of prizes:

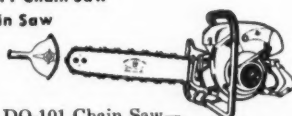
Contest #1



For naming the Disston DA-211 Chain Saw—9 hp, 2-man

- 1st prize \$500.00 cash and a DA-211 Chain Saw (approx. value: \$495.00)
- 2nd prize \$300.00 cash and a DA-211 Chain Saw
- 3rd prize \$200.00 cash and a DA-211 Chain Saw
- 4th prize \$100.00 cash and a DA-211 Chain Saw
- 5th & 6th prizes—each a DA-211 Chain Saw

Contest #2



For naming the Disston DO-101 Chain Saw—1- or 2-man, versatile, lightweight

- 1st prize \$500.00 cash and a DO-101 Chain Saw (approx. value: \$322.00)
- 2nd prize \$300.00 cash and a DO-101 Chain Saw
- 3rd prize \$200.00 cash and a DO-101 Chain Saw
- 4th prize \$100.00 cash and a DO-101 Chain Saw
- 5th & 6th prizes—each a DO-101 Chain Saw

BUT REMEMBER—get your dealer or distributor to help you to enter either or both contests, *you must have official entry blanks*. You can get them FREE, along with contest rules and instructions, from your nearby Disston Chain Saw dealer or distributor. If you don't know his name, write us. Go to your dealer and get your contest entry off this week sure! Contest entries must be postmarked Oct. 31, 1953, or earlier.

Entries will be judged by The Reuben H. Donnelley Corporation. Duplicate prizes will be awarded in case of ties.



HENRY DISSTON & SONS, INC.

48 I Tacony, Philadelphia 35, Pa., U. S. A.

DEALERS

Special cash prizes for you, too! Ask your Disston distributor or write us for details.

CAPITOL TUNNEL . . .

Continued from page 132

officials of the District of Columbia, who also extended invaluable assistance in planning adequate maintenance and control of traffic.

The contraction and expansion of steam and refrigerant lines, particularly in the larger sizes of pipe and because of the extremely long lines, gave rise to some special problems to take care of the stresses, especially where the tunnel changes its direction 90 deg., and also where there are smaller, intermediate tunnels taking off to various government buildings along the route.

Pipes are carried on 8-in. WF 17-lb structural steel beams and anchored to the concrete structure by brackets consisting of a unit of two 20x3/4-in. steel pipes and four 5x3 1/2 x 3/4-in. angles welded to form racks and cast into the concrete floor, roof slabs and walls. In addition, there are expansion joints at regular intervals and angles wherever the pipes make a change in direction so as to anchor the end of a particular run to the concrete structure. The two 30-in. chilled water lines are insulated with solid natural cork and involved a special contract for the cork insulation, which is one of the largest single contracts ever undertaken by the Armstrong Cork Co.

From the inception of the work, George A. Weschler is project director for the Capitol. Architect, J. Slater Davidson, vice-president and chief engineer of the Chas. H. Tompkins Co., has been the project manager for the contractor, Bruce Hutsler is the job superintendent with Dennis Kelley, assistant superintendent. Subcontractor for excavation and relocation of sewer and water lines is Leo Butler of College Park, Md. Work on steam and refrigeration pipes is being accomplished under a subcontract with the Norair Engineering Corp., and the electrical work by Central Armature Works, Inc.

WANT SOME MONEY?

CONSTRUCTION MEN are coming up with new methods and unique job-built tools and machine accessories all the time. Why not take a picture or two of the next interesting development on your job? Then send pix and a complete description to us for possible publication in *Construction Methods and Equipment*. The chances are that we can use your material—and you will get your check right away.—The Editor



1 SHEET OF SELF-FURRING metal lath is first bent to fit the column with the dimples against the column flange. Edges are lapped and tied vertically.



2 STANDARD EXPANDED FLANGE corner beads are wire-tied to the corners to allow for $1\frac{3}{8}$ in. of plaster over the face of lath for a 3-hr fire rating.



3 LIGHTWEIGHT AGGREGATE PLASTER is applied in three coats. The aggregate is light so total thickness can be applied in brown coats without sagging.

New Metal Lath Helps Fireproof Columns

THEY'VE GOT two new construction ideas under way at the Electric Boat Company in Groton, Conn.—one, the atomic-powered submarine, about which we can give you no construction details, and another, on which we can give you some details—a method of fireproofing steel columns in the company's new three-story office building. It will be one of the first buildings to use a new economical column fireproofing developed and tested just a few months ago at the Underwriter's Laboratories and now being manufactured by Metal Lath Manufacturers Association, Cleveland, Ohio.

Construction is simple. Self-furring metal lath is bent to fit the column to be fireproofed. No

channel furring is required. The lath has evenly spaced indentations or dimples which hold it $\frac{1}{4}$ in. away from the steel surface and provide space for the plaster to key. Corner beads are wire-tied to the four corners and adjusted for the desired thickness of plaster.

A $1\frac{3}{8}$ -in. coat of gypsum plaster using lightweight aggregate instead of sand was applied to the columns on the Electric Boat job. This thickness will provide a fire resistance of 3 hr. Tests proved that $1\frac{3}{4}$ in. of gypsum-perlite plaster would provide a 4-hr rating and that 1 in. would give a 2-hr rating.

The method is claimed to be economical for it saves on three of the most valuable construction

commodities—space, weight and labor. Neither furring nor wood forms are required. Lathing is a one-man operation. Plastering is simple, and the materials are standard.

Designers claim this type of fireproofing construction weighs 15% less than when the columns are encased in concrete or masonry.

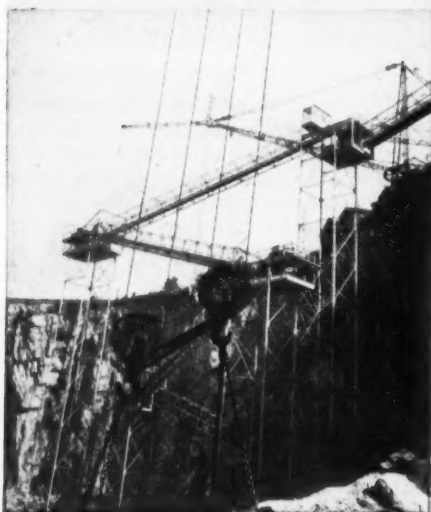
Because plaster is used, this new fire protection helps save additional dollars by performing a dual function.

Merritt-Chapman & Scott Corp. of New York are engineers and contractors on the job and E. B. Carely and Co., also of New York, are the lathing and plastering contractors.

The Right Wire Rope
will do the trick!



TINY PARTICLES OF GRANITE DUST are constantly grinding away the wire ropes on this Storage Derrick. But $\frac{3}{4}$ " Tiger Brand Ropes have averaged many years of good service in spite of this severe abrasive action.

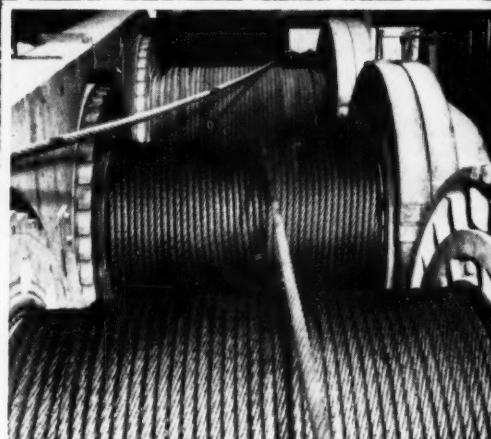


SAFE AND SOUND after years of continuous service. That is the amazing record of the $\frac{3}{4}$ " Tiger Brand Ropes on this cableway, which is used to move workers in and out of the quarry.


At this granite quarry . .



THE WESTON & BROOKER COMPANY likes Tiger Brand Wire Ropes because they meet the stiff operating requirements and do every job economically.



... Tiger Brand Wire Ropes have been used 29 years!



DOWN AND DOWN YOU GO! It takes 10 minutes to travel the 220 ft. from rim to floor of Weston & Brooker Company's huge granite quarry at Cayce, South Carolina. The 1" Tiger Brand Wire Ropes on this derrick have handled loaded concrete trucks, power shovels, and other heavy equipment for 5 years, and the ropes are still in good operating condition.

P LUNGING 220 ft. down through solid granite, this big open quarry is one of the deepest in the country. But no roads wind down to the floor, so The Weston & Brooker Company must transport all men and equipment with cableways and derricks.

This old, experienced company prefers American Tiger Brand Wire Ropes for this equipment over any other brand. Tiger Brand Ropes meet the tough operating requirements and give remarkable service.

On a cableway, which was installed in 1924, Tiger Brand Ropes have given long and phenomenal service.

On a big 70-ton stiff-leg derrick, which lifts shovels, trucks and other equipment weighing up to 80 tons, Tiger Brand Ropes are still in use after five years of hard service.

On a revolving storage crane, which operates right in the thick of hard, abrasive granite dust, Tiger Brand Wire Ropes again have given exceptional service.

Tiger Brand Wire Ropes will give *you* exceptionally long, low-cost service too. Send the coupon for a run-down on the hundreds of sizes and types available and typical jobs that each rope can do.



HELPFUL GUIDE BOOK

American Steel & Wire
812 Rockefeller Building
Cleveland 13, Ohio

Please send me, without obligation, a copy of your booklet, "The Right Rope for the Job," which lists the correct Tiger Brand Rope to use for hundreds of typical applications.

Name.....

Company.....

Address.....

City & State.....

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

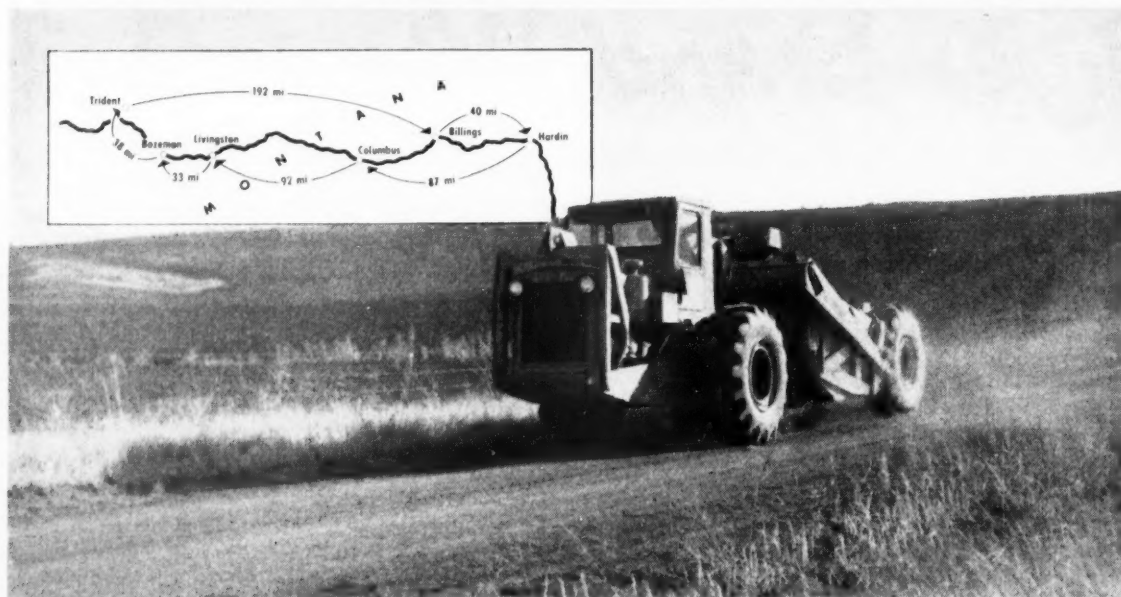
U-S-S AMERICAN TIGER BRAND WIRE ROPE

Excellay Performed



UNITED STATES STEEL

Pictures of the month... by LeTourneau-Westinghouse...



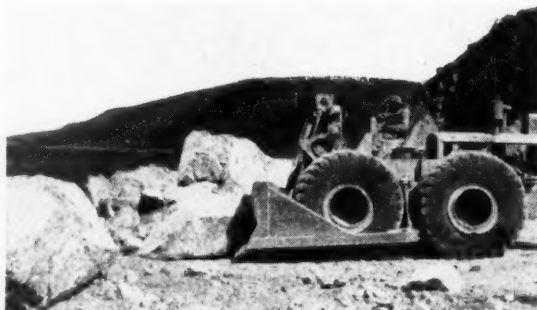
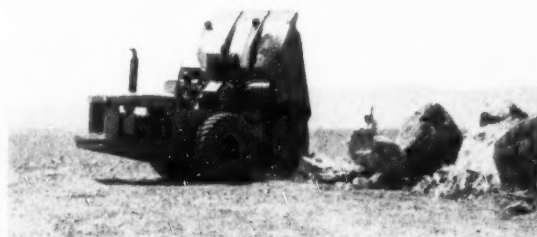
IN 7 DAYS, 10 JOBS, 480 MI—Self-powered moves at 28 mph and high production resulted in a busy 7 days for this Montana-owned D Tournapull. Monday, the "D" stripped gravel from an old roadbed near Billings. Self-loading ability eliminated scarifying and cut 6 hrs from estimated time on this job . . . Tuesday, at Hardin, it leveled 5 acres of farmland in 5 hrs, 3 times as fast as could a crawler and 11-yd pan, according to contractor . . . Wednesday, it raised roadbed and finish-graded 2-to-1 slopes

for a road near Columbus . . . Thursday, widened road near Livingston and filled old irrigation ditch near Bozeman . . . Friday, it completed 4 jobs 30 mi apart: (1) cut farm access road, self-loading up to 7 yds of loam in 45 seconds; (2) cleaned gravel from road ditches; (3) cut down old levee, moving 180 yds of hard clay hourly; (4) leveled field, despite sinking 4 in. into mud when loaded . . . Monday, averaged 20 mph on a 192 mi trip from Trident to Billings . . . Tuesday, leveled field, completing 1400 ft cycles every 2 min.



MOVES SAND THAT OTHERS CAN'T

Finley P. Smith, clearing and leveling Florida beach property, uses 5 D Tournapulls and 3 Tournatractors for all work. He gives as typical output for each Tournatractor-loaded 7-yd "D" . . . 100 pay yds of sand hourly on 600 to 1000 ft hauls, 120 pay yds on 400 ft hauls. Says Smith, "No other scraper can move this beach sand. They're all too heavy to get traction in the poor footing."



HAUL 30 TONS OF ROCK

— 90 miles south of San Diego, Calif, at Ensenada, Mexico, 6 rear-dump Tournatractors and 1 Tournatractor are extending this 130-ft-wide breakwater 5000 ft into more than 50 ft of water. Hauling over existing fill, Tournatractors make one-mile cycles with 12 pay yds every 7.7 minutes. Some rocks hauled measure 5 x 6 x 12 ft and weigh over 30 tons. Tournatractor (below) levels fill and maintains haul road. Say Equipment Owners Clark & Mansilla, "It's amazing how well these machines stand up under the rough conditions we are working in."

(Advertisement)

with performance reports from around the country



OMAHA, NEBRASKA — Filling over a muddy stream-bed, 4 D Tournapulls bring in 280 pay yds of clay hourly to start leveling a 40-acre, 100,000-yd housing site. "D's" self-load 5 pay yds . . . complete 1100-ft cycles up and down 10% grades every 4.1 min. Units belong to Willard Robinson, Omaha, a specialist in housing work. "Fine machines," he says, after using his "D's" on 10 jobs (100,000 to 300,000 yds each) in the past 2 years.



COUNCIL BLUFFS, IOWA — Tight quarters make no difference to Eblin Constr Co, blue-topping Rock Island freight line. Operators say their 5 Tournapulls are the only rigs that can work and turn in the 31 ft between farm fields and siding. "C's" turn in 15-ft radius. Competitive units need radius of 18 to 30 ft



GALLUP, NEW MEXICO — Combined output of 198 yds hourly for 2 C Tournapulls in hard, unrooted, sunbaked clay speeds road job for Jack Adams, Los Alamos contractor. Loads of 11 yds take 35 to 50 seconds with 148 hp pusher. Haul speeds on 6400-ft cycles average 15 to 20 mph. Top speed of "C" is 35 mph.



MINNEAPOLIS, MINN. — While cat skinner must yank levers all day long, Tournapull operator only need push a button to steer or control scraper. Fatigue is greatly reduced, so output stays high all day. Machines shown belong to Yes Phillippi,

Minneapolis. His 3 C Tournapulls moved 42 loads (462 pay yds) of sandy clay per 50-min hour over 1100-ft cycles . . . completed this 25,000-yd industrial plant leveling job in less than 2 weeks. 8-mile trip through city to next job took Tournapulls 40 minutes.

cont'd on next page

(Advertisement)

Pictures of the month... by LeTourneau-Westinghouse...

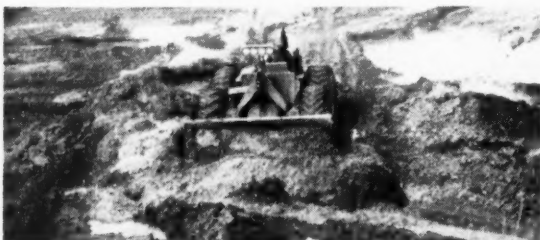


KERRMOOR, PENNSYLVANIA — Diamond T Stripping Company, of Philipsburg, moves 7000 cu yds of overburden per 16-hour day with 2 Model "A" Tournarockers. These giant Rear-Dumps haul 50 tons of the blasted rock per trip. They

are loaded by a 6-yd Lima shovel. Operators control Tournarockers easily . . . just push an electric switch to steer or dump . . . flick a small lever to change gears. No wrestling bulky levers . . . no clutching needed. Photos show stripping from a Class D seam of coal.



BUFFALO, N. Y. — At western end of the 427-mile New York Thruway, William J. Crawford moves fill with 3 C Tournapulls . . . compacts with LeTourneau-Westinghouse Sheepfoot Roller. On one section of job, each of his Tournapulls made a 2000 ft cycle every 4.8 minutes . . . delivered 114 pay yds of clay per hour.



MINFORD, OHIO — \$56,801 That's all Bill Ward has spent for repairs on his 2 Tournatractors — one 2 years old; the other, 3 months! Used mainly on industrial plant building jobs, units have been 99% mechanically efficient. They drive everywhere without planking. Main assignments: pulling 45-ton trailer, maintaining access roads, leveling dumps, grading parking areas, stockpiling coal.

GLOUCESTER, MASS. — Big low-pressure tires give Gil Wyner's Tournatractor ample flotation for clearing muck from this rain-flooded gravel pit. Once pit is cleaned, it will provide fill for the final 3.7-mile link in the Boston Circumferential Highway. Despite abrasive footing, tires shown have worked 6,000 hours with one recap. For more information on this and other tools shown on these pages, write LeTourneau Westinghouse Co, Peoria, Illinois.

Tournapull, Tournaroller—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark Pic 499 G

(Advertisement)

"After
11,000
Hours,

the Lack of Bearing Wear
was Amazing"...

*says G. A. Krebs,
Newark, Ohio*



Mr. Krebs is convinced that Sinclair SUPER TENOL[®] is the best motor oil the G. Alfred Krebs Co. has ever used. *And well he might* — for his contracting firm has the figures to prove it.

Mr. Krebs writes, "We recently overhauled one of our $\frac{3}{4}$ yard shovels and the condition of the engine amazed us. Though it had been in service more than 11,000 hours, the interior was exceptionally clean and free of deposits. Engine wear was unbelievable; there was no appreciable wear to main bearings and wear of rod bearings averaged about 0.001 inches. Cylinder wall wear was even — averaged about 0.008 inches."

Mr. Krebs mentions another point of interest: "We have found that SUPER TENOL performs equally well in *all* of our equipment. Regardless of the type or age of equipment, this oil gives superior performance. It has helped reduce our maintenance costs and prolonged engine life in diesels as well as gasoline engines."

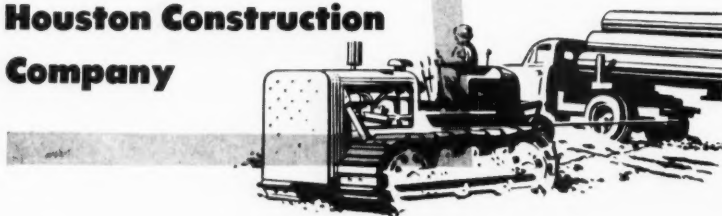
Apply these facts to *your* equipment — figure the savings in time and money and you'll see it will pay you to switch to Sinclair SUPER TENOL. Contact your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

Prolong Engine Life with...

SINCLAIR SUPER TENOL



12 CARCO WINCHES speed up jobs for Houston Construction Company



IN PREPARING THE BED on a 40-mile stretch of a 158-mile, 30-inch pipeline from Texas to Tennessee, the Houston Construction Company used one of their 12 Carco GO winches to tow a 30-ton ditcher. This ditcher has a 12-foot cutting wheel that cuts about one mile of bed, 5½ ft. wide by 6 ft. deep, every 12 hours.

Carco GO winches were specified because this winch was designed and built for pipeline and oil field work. It's a two-speed winch . . . a slow speed with high line pull for the hard, steady pulls needed in towing heavy machinery, rescuing mired and ditched equipment and pulling long pipe sections . . . and another speed for lighter winching jobs such as loading, unloading, lifting pipe, and general construction and oil field uses.

The Carco GO winch has an extra large cable capacity for the "long reach." It mounts on tractors in the 76- to 100-horsepower range. A four-roller fairlead, which maintains maximum line pull regardless of the direction of the load, can be easily attached. See your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington. Branches at Portland, Oregon and Franklin Park, Illinois.

**WINCHES FOR ALL
INDUSTRIAL TRACTORS**



On-the-Job Contractor-Labor Relations

by LEON B. KROMER, JR.

Building Trades Convention

WHAT DO the accomplishments of the recent Building Trades Department convention mean to contractors? Possibly the end of the present method of handling jurisdictional disputes. Coming up with the only concrete plan for ending jurisdictional disputes within the AF of L (the announced reason for the Carpenters' Union temporary defection), the Building Trades Department proposed that a sort of czar be appointed to be known as the "jurisdictional Adjudicator." As one building trades official put it, "In a nutshell, we propose that all jurisdictional conflicts be resolved by one duly qualified person."

The report accompanying the resolution indicated that by adoption of the plan "we (the unions) could successfully eliminate our employers' participation in deciding which trade does which work." Under the present set-up employers are equally represented with unions on the National Joint Board for the Settlement of Jurisdictional Disputes which is headed by an impartial chairman.

That there has been dissension over some of the Board's decisions has long been known. The lathers and electricians withdrew, and the plumbers served notice of withdrawal from participation in the plan under which the Board was established. A special committee of top building trades officials was appointed and changes agreed upon in the Board's union membership in an effort to win back the support of these unions.

AF of L delegates must approve the building trades resolution. As this is written no action has been taken. However, watch developments as any serious consideration of such a proposal could spell "finis" to the National Joint Board. This might result in jurisdictional troubles for you.

Wage-Hour Law Again

Road builders should keep a sharp eye on their pay practices.
(Continued on page 146)



IMPOSSIBLE WITHOUT EXPLOSIVES

During 1953, stripping operations will account for some 120 million tons of coal, or close to one-quarter of the total annual production. In extreme cases, deposits 150 feet or more below the earth's surface have been mined. For every five feet of coal thickness, an average of 39 feet of overburden first has to be removed. It's a job that never could be handled economically without explosives. Hercules has pioneered in developing the right types of explosives and has the service facilities to help solve any blasting problem concerning coal mining, metal mining, quarrying, construction, petroleum.

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Explosives Department, 974 Market St., Wilmington 99, Del.

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

(Advertisement)



You Can Dig and Bulldoze with **HYSTAWAY!**



Hystaway boom can be removed in minutes, keeping mast in place, for extensive bulldozing work. Or the Hystaway, including mast, can be removed in less than one hour, if desired. Remounting is just as easy and fast.

... and that means getting jobs done *faster* with less equipment

HYSTAWAY® is the *only* machine that performs excavator-crane work as well as bulldozing and other tractor service. The *only* excavating machine that keeps productive *all* the time. Because when **HYSTAWAY** isn't digging, it can backfill or do other bulldozing jobs by simply turning around and using the bulldozer. For extensive bulldozing, or other tractor work, the Hystaway can be removed from the tractor in a matter of minutes. It can then be remounted, when needed, in a short time. This means you get *more* out of your equipment investment; more profit from every working hour.

Other important Hystaway advantages: No tail swing, permitting digging against fences, walls and in other close quarters; heavy-duty diesel tractor engine power for faster digging; crawler tractor mobility and maneuverability. Hystaway can be mounted on new or *used* Caterpillar track-type tractors. Hystaways are in service all over the world. There is no other *machine like Hystaway!* Get full details from your Caterpillar-Hyster Dealer or write for Catalog 1235 to:

HYSTER COMPANY

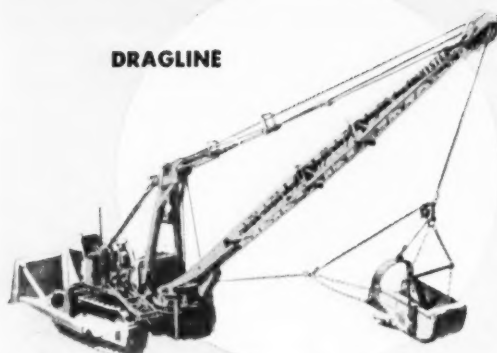
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Peoria 1, Illinois



THERE'S PROFIT IN
**HYSTER
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ONLY HYSTAWAY OFFERS ALL THESE MACHINES IN ONE!



DRAGLINE

1. DRAGLINE
2. SHOVEL
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4. CLAMSHELL
5. CRANE
6. PILE DRIVER
7. PLUS BULLDOZER



HYSTER COMPANY • PORTLAND, OREGON; PEORIA, ILLINOIS; NIJMEGEN, THE NETHERLANDS

DART CRANE CARRIERS

**A SOLID FOOTING
for ANY RIG!**



The DART Carriers, which for years have been the standard carriers for many well-known manufacturers of cranes and shovels, are available . . . ready for mounting any equipment. Built by the builders of the World's Largest Truck, the DART Carrier is a sturdy, sure footing for any rig.

**Special Chassis
Available for
Any Rigs
from 2 Ton to
50 Ton Capacity**

For complete information
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DART TRUCK COMPANY
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DART TRUCKS



Kansas City 8, Missouri

...For PEAK PERFORMANCE On Every Job CARVER PUMPS

If you want peak performance on every dewatering job depend on CARVER!

CARVER manufactures the complete line of self-priming pumps from 4000 G.P.H. to 250,000 G.P.H. Every one of these pumps has the same simple design, sturdy construction and rugged durability that mean outstanding performance where jobs are really tough.

Your CARVER DISTRIBUTOR can also supply you with Diaphragm Pumps and a full line of high pressure Jetting Pumps. See him today.

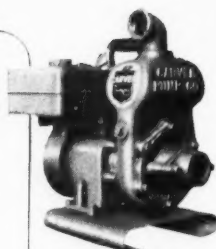
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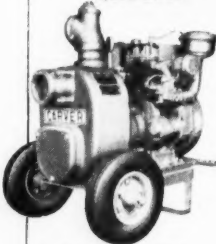
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the quality name in pumps

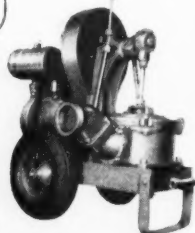
4" DIAPHRAGM PUMP
6,000 G.P.H.



1 1/2" SELF-PRIMING
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3" SELF-PRIMING
30,000 G.P.H.



Sterling's **WOOD HANDLE
WHEELBARROWS**

No. D4W — for handling sand and other dry materials. 14 ga. tray. Max. cap. 4 cu. ft.

Wheel Your Materials . . . at LOW COST!

You'll like these new, lightweight, easy-wheeling Sterlings, designed for faster material transport service. Famous Sterling balanced construction puts 80% of the load on the wheel . . . only 20% on operator. Equipped with long wood handles, formed to fit operator's hands. Steel channel legs and reinforcements are just the right height. Means less stoop for operator and greater leg clearance. Steel wheel, roller bearing wheel with pneumatic tire or zero pressure cushion type wheel, can be furnished. Write for new Wheelbarrow Catalog.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBARROWS



Look for this Mark of
STERLING Quality

LABOR . . . Continued from page 142

Eight contractors on the construction of a major thruway recently had to pay more than \$19,500 to 109 employees (truck-drivers, timekeepers, rodmen, etc.) for failure to pay overtime and keep the required records of wages paid and hours worked. Restitution of back overtime pay resulted from investigations by Wage-Hour Inspectors.

To avoid having to pay back wages remember that the Wage and Hour Law (Fair Labor Standards Act) requires:

1. Payment of at least \$.75 per hr to covered employees.
2. Payment of at least time and one-half for all time worked over 40 hr in one work week.
3. Accurate records of hours worked and wages paid

As interpreted by the Administrator of the Wage-Hour Law, all employees (except executive, professional and administrative) performing work on construction of most new highways, bridges and roads are covered. You can save money by writing to the nearest Regional Office of the Wage-Hour Division, U. S. Department of Labor (there's one in every major U. S. city) for the booklet describing the act. It will tell you the types of employees covered, the tests to apply to duties of employees you may think exempt, and payroll record information required.

Carpenters' Return

Less than a month after leaving the AF of L the carpenters returned, thus resolving what might have brought on many knotty problems. Actually, there was no break in relations as, under the agreement providing for reinstatement, the union continued its monthly per capita payments to the federation. It remains to be seen if any serious action is taken by the top AF of L to avoid jurisdictional raids within the organization.

YOUR ATTENTION

MAY WE CALL your particular attention to the article "How to Improve Contractor-Labor Relations" beginning on page 79. This is the first in a three-part series presenting productive suggestions from and for contractors, labor leaders and job superintendents (the guys usually in the middle). Parts 2 and 3 will appear in subsequent issues of *Construction Methods and Equipment*.



Wire Rope at Work — Perhaps the most unusual building of our time is the State Fair Arena at the State Fair Grounds, Raleigh, N. C., shown here while construction was in progress. Startling in design, this steel-and-concrete structure is some 300 ft long by 300 ft wide, with sides that rise gracefully in perfect arcs. But its most striking feature is the gently-curved roof, which is supported entirely by Bethlehem steel cables.

Forming a grid with 6-ft x 6-ft squares, the cables, zinc-coated for resistance to corrosion, are securely anchored to the framework of the building and are fastened together at points of intersection. Bolt-clipped to the grid are corrugated metal sheets which, with the topping, constitute the roof proper. This ingenious application of steel cable—a member of Bethlehem's wire rope family—has already aroused wide interest and may well suggest a new trend in design and construction.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:
MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING





THE 10-FT DIA welded steel pipeline was first cut into three 40-ft and eleven 30-ft sections and then lifted off the cradle by the

aerial cableway, called the Philstram. The weight was distributed ten ways by two pulleys and eight blocks.



AFTER THE PHILSTRAM had lifted the cut pipe clear of the cradle, a $\frac{3}{4}$ -in. cable was attached to a tractor, pulled clear of the bridge structure and lowered to the ground by the Philstram.

Aerial Cableway Speeds Pipe-Bridge Salvage

AN UNUSUAL SALVAGE job has been accomplished on a 10-ft dia welded steel pipeline and a 360-ft steel bridge across a deep canyon on the slopes of Mt. Rainier near Tacoma, Wash., by using a machine called a Philstram (CM&E, May 1951, page 54) operating from an aerial cableway.

The bridge, built in 1911, was used until 1945 to carry a pipeline for water from a diversion dam on the Nisqually River to a powerhouse across Nisqually Canyon, which is 400 ft below the bridge center. In 1945, the bridge was abandoned because a new power project was completed.

The abandoned structure became a troublesome and a potentially dangerous problem to Tacoma City officials because curious humans would ignore the posted danger signs and walk out on the span. Occasionally, these people would freeze from fright after reaching the center of the span and would send out frantic S.O.S.'s for help. The city decided to remove the structure so they advertised it for sale and consequently sold it to the K & L Logging Co. of Morton for

(Continued on page 150)

HEILINER

lowest maintenance costs make EARTH-MOVING CONTRACTS MORE PROFITABLE

COMPARE the maintenance figures in this chart with those for any other self-powered scraper. It's positive proof that *earthmoving costs are lower* with low-maintenance Heiliners on your job! Down time for major repairs is cut from days to hours! That means more time on the job moving dirt . . . less time in the shop running up bills . . . more profit on every earthmoving contract.

Heiliners are designed along automotive lines. They're as simple and easy to maintain as a truck. For instance, there's no need to pull the wheels to replace the axle, no need to pull the engine to repair clutch or transmission. Transfer case can be taken off in 20 minutes. The hydraulic pump can be changed in an hour and a half. Other major repair jobs are equally easy and fast.

"My 5 2C800 Heiliners save 1¢ to 2¢ per yard over competitive equipment!" says Howard Stewart, contractor of Brookville, Indiana. More and more contractors all over the country are now realizing greater profits with Heiliner fleets. See your Heiliner distributor for further facts and figures.

Sales Offices: New York, Union, N. J., Washington, D. C., Atlanta, Cleveland, Milwaukee, Detroit, Chicago, Kansas City, Denver, Dallas, Los Angeles, Seattle; Rio de Janeiro, Brazil.

**NO OTHER COMPARABLE
SELF-POWERED
SCRAPER CAN MATCH
THESE FIGURES FOR
LOW MAINTENANCE
COSTS!**

Remove and Replace Axle Shaft	1-2 hrs. (1 Man)
Remove and Replace Master Clutch	4-6 hrs. (2 Men)
Remove and Replace Transmission	4-6 hrs. (2 Men)
Adjust or Replace Final Drive	1-2 hrs. (1 Man)
Remove and Replace Axle Differential Carrier	8-10 hrs. (2 Men)
Adjust P.C.U. Brake and Clutch	10-15 Min. (1 Man)
Replace P.C.U. Clutch Assembly	10-15 Min. (1 Man)
Replace P.C.U. Brake Assembly	15-20 Min. (1 Man)

THE HEIL CO.

R-21

DEPT. 2103, 3002 WEST MONTANA STREET, MILWAUKEE 1, WISCONSIN

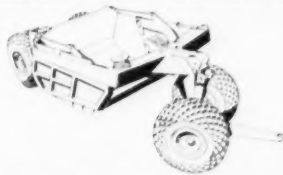
Factories: Milwaukee, Wis. — Hillside, N. J.



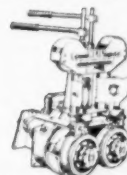
13 and 18-yd. Heiliner Scrapers



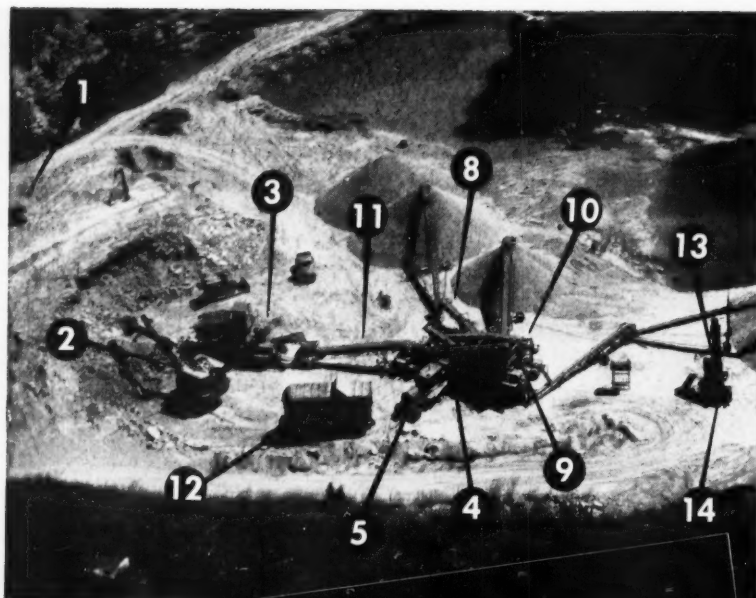
20-yd. Heiliner Bottom Dump Wagon



6, 9, 11 and 16-yd. Tractor Drawn Scrapers



Cable Power Control Units



TWIN DISC 14 Drives in action!

Typical example of powered equipment in modern industry is Stoneridge Limestone Company's aggregates plant near Rochelle, Ill. And typical example of Twin Disc's complete range of Friction and Hydraulic Drives is the aerial photograph above of the Stoneridge operation. Nine of the Twin Disc Drives were built-in by the original equipment manufacturer . . . five were installed by Stoneridge.

Whether built-in or added for extra performance, Twin Disc Drives have the *right design, construction and capacity*. See your Authorized Twin Disc Hydraulic Dealer.

And here they are . . . count 'em!

Twin Disc Spring-Loaded Clutch on International-powered LeRoi Compressor (1).

Twin Disc Friction Power Take-Offs on Cummins-powered Bay City Shovel (2); Caterpillar-powered Universal Jaw Crusher (3) and Universal Hammer Mill (4); and on Minneapolis-Moline-powered Pioneer Roll Crusher (5).

Twin Disc HYDRO-SHEAVE® Drives on Stoneridge-built horizontal conveyor (8); Simplicity Vibrating Screen (9); Pioneer Vibrating Screen (10); and Stoneridge-built Conveyor (11).

Twin Disc Hydraulic Coupling on Hercules-powered generator plant (12).

Twin Disc Friction Clutches (two each) on Nelson P-10 Loader (6, 7; not shown); and Nelson P-11 Loader (13, 14).



TWIN DISC

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA

BRIDGE SALVAGE . . .

Continued from page 148

\$4,500, with removal stipulated.

The logging company referred the dismantling problem to Phil Grabinski of Portland, Ore., whose Philstram has been used on a number of construction jobs in the Pacific Northwest and Alaska. Under his direction the $\frac{3}{8}$ -in. plate steel pipe first was cut into three 40-ft and eleven 30-ft sections (the pipeline extended beyond the bridge at both ends).

Four $1\frac{1}{4}$ -in. cables, 1,200 to 1,400 ft long, were strung across the canyon, anchored to stumps at one end and to a buried load of logs at the other end. The Philstram was suspended from these cables, moving back and forth by two $\frac{5}{8}$ -in. cables wrapped around wheels driven by a 120-hp Chrysler engine. The operator rode the carriage and had control of all the operations.

Philstram Lifts

Two slings of $\frac{3}{4}$ -in. cable were fastened around each pipe section which weighed from 10 to 13 tons. The slings then were attached to the Philstram by two $\frac{3}{8}$ -in. hoist cables on the same drum. The weight was distributed ten ways by two pulleys and eight blocks.

The Philstram lifted the pipe above the bridge and moved it to a spot on the bridge 60 ft above a cleared area. Here the pipe was lowered and a $\frac{3}{4}$ -in. cable attached to a Model 14 Allis-Chalmers bulldozer on the ground below. The bulldozer pulled the pipe clear of the bridge structure and the Philstram lowered it to the ground. The bulldozer then was used to push the pipe to a near-by road where it was trucked away. All 14 pipe sections were lowered to the ground in a single day.

Each 80-ft bridge approach was divided into three sections, by punching out the rivets and lowering to the ground. These sections weighed from 16 to 20 tons. A section weighing approximately 15 tons was first removed from the middle of the bridge itself so that clearance could be provided to remove a 100-ft full arch section by tipping it back to a perpendicular position. This section weighed approximately 90 tons.

In this operation, the Philstram first tipped the bridge section to approximately 80 deg by tackle reeved up between the upper near end of the span and a point on the

(Continued on page 152)

Bury it!

Forget it!

Yes, here's a sump pump that all you do is bury it . . . forget it . . . and run it for days. A dry sump cannot hurt this pump. For pumping more liquids . . . faster . . . higher . . . cheaper . . . use an Ingersoll-Rand Air Operated Sump Pump.

These pumps are powered by Ingersoll-Rand "Multi-Vane" air motors which have an unequalled reputation for reliability. Put these dependable sump pumps to work for you earning extra profits. They will pump as much as 250 gallons per minute and will handle heads up to 200 feet.

This Ingersoll-Rand centrifugal type sump pump is the cheapest way to move water, oil, sewage or medium sludge. It's air operated for economy. No need for a standby operator. It consumes a minimum of air. On heads of more than 40 feet air consumption is as much as 30% less than comparable units.

Write today for complete money saving information on this remarkable sump pump.



Size 25 Sump Pump.

*Size 35
High Head
Sump Pump.*

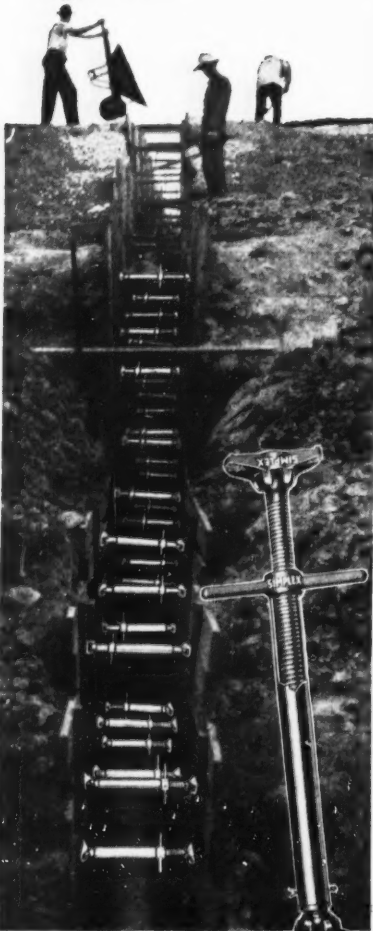
The I-R air operated sump pump is available in Sizes 25 or 35. Both types are lightweight for easy carrying by one man. They use dirt-and-liquid-protected bearings for the impeller and motor rotor. All parts are made of bronze, stainless steel, or rust-proofed steel. The Size 25 can also be supplied with an all-bronze exterior when used in corrosive or inflammable liquids.

use the  **CONTRACTORS'**
COMBINATION

Ingersoll-Rand

11 Broadway, New York 4, N. Y.

Sure Protection AGAINST CAVE-INS

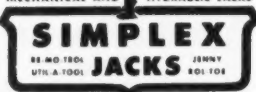


SIMPLEX Drop Forged Steel TRENCH BRACES

For sure protection against cave-ins, injuries and costly re-digging, specify Simplex Trench Braces. Constructed entirely of steel drop forgings, with ball and socket joints, at each end to ensure quick adjustment and tight grip at all angles. Adaptable to any width trench. Sold with or without pipe in a complete range of sizes.

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MECHANICAL AND HYDRAULIC JACKS



TEMPLETON, KENLY & COMPANY

2509 Gardner Road, Broadview, Illinois

BRIDGE SALVAGE ...

Continued from page 150

ground. The hoist cable then was clamped off and a new tackle reeved from the top of the span to the Philstram which pulled the span to a full perpendicular position.

After the rocking pins were removed, the span was pulled far enough to the side, by a $\frac{3}{4}$ -in. cable set between the top of the span and a tractor to permit the Philstram to lower the span gently to the ground. This phase of the operation took a day-and-a-half. The entire dismantling, with a 5-man crew, took less than 30 days.

Sand in Cut Keeps Asphalt Separated

Concrete saws are making history by the unusual ways they are being applied to speed up construction jobs. Cutting concrete paving slabs is well known, but the cutting of asphalt is a newer twist.

Chester S. Yardley of Santa Rosa, Calif., had a contract to remove the center section of a street where an abandoned water main had caused pavement to settle. The job was done by sawing out the area that had failed—cutting 1,800 ft of 9-in. macadam-base asphalt to a depth of 3 $\frac{1}{2}$ in.

To keep traffic flowing, all sawing was finished before breaking out any of the faulty area. To prevent possible rejoining of the asphalt at the cut, which might result from summer's heat and compacting by auto traffic, fine sand was sifted into the finished cut behind the saw. Yardley used a Clipper Model C-130 saw and a Clipper Diamond blade.

U. S.
DEFENSE
BONDS

NOW EVEN BETTER



Get PRE-BID estimates by competent, practical construction men who have specialized in all phases of dewatering for up to 26 years.

All estimates based on careful analysis of sub-soil borings, on actual experience in the soils to be dewatered, and on site investigations.

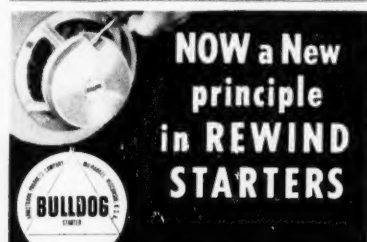
When soil conditions indicate other dewatering methods are more practical and economical, we are qualified to advise other proven methods.

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CORPORATION**

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This amazing new Armstrong Starter is packed with important new features — It is 50% lighter — smoother acting — easier to service and mount. The principle is based on the use of friction inside a conventional rope starter cup. Actuated by a cam principle it engages after $\frac{1}{4}$ inch pull. Eliminates danger of teeth or pawls breaking — permits greater tolerances in mounting. Available with stationary or rotating screen. Competitively priced.

ARMSTRONG BULLDOG STARTER HERE'S HOW IT WORKS

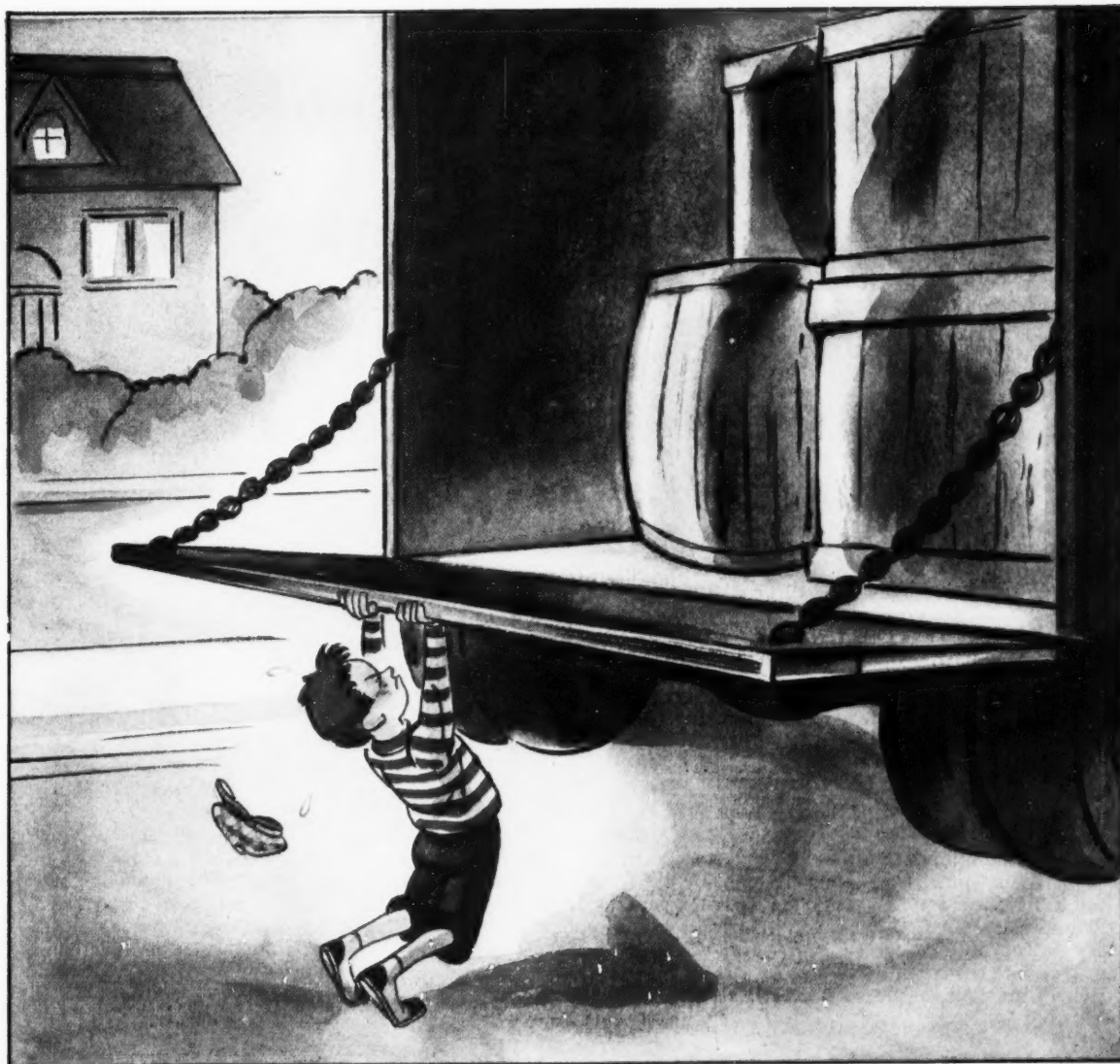


1. Cam actuated teeth extend to grip inside of standard rope pulley cup.
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Don't send a boy to do a man's job!

The job is way over your head, Sonny! You need a man's stature, a man's strength for that!

That goes for motor oils, too. Lubricating the engines of hard-working trucks and buses calls for man-sized Phillips 66 Heavy Duty Motor Oil!

This tough oil, made from high-quality crudes, is able to withstand terrific temperatures, to stay on the job on long, hard runs. Specially processed by "cold fractionation" . . . no deterioration from

overheating. Exceptional lubricating "goodness" plus specially tested additives to disperse sludge and carbon and to guard against corrosion, foaming and acid action.

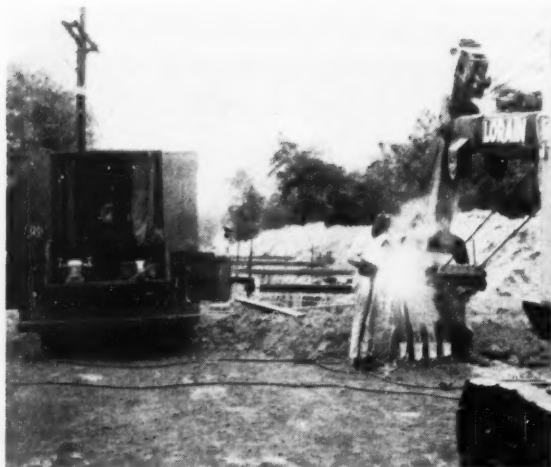
For full information on how Phillips 66 Heavy Duty Motor Oil actually saves money on repairs and overhauls, ask to have a Phillips lubrication engineer call on you.

PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA

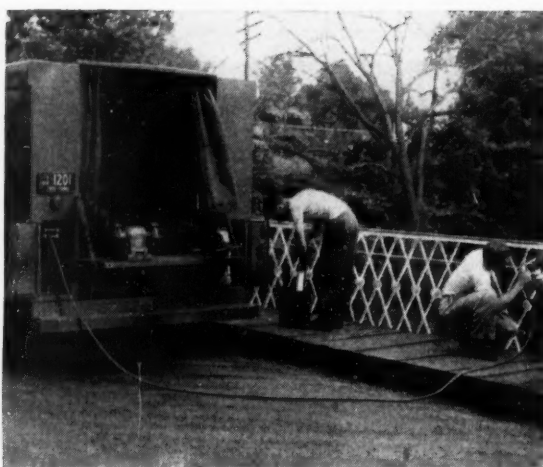


Oil for the Engines of Commerce

PHILLIPS 66 HEAVY DUTY MOTOR OIL



IF YOUR REPAIR and maintenance work involves heavy equipment, this Davey field service unit—claimed to be completely equipped to handle all field problems—should help cut downtime.



EQUIPPED with an air compressor, 150 psi, with 2-cu ft receiver, the unit is handy for spray painting, tire checks or other maintenance jobs located in areas removed from service shops.

On-the-Job Service Unit

THIS DAVEY-PRODUCED field service unit mounted on a short wheelbase 4-wheel-drive truck of the type originally designed for rough terrain wartime travel, houses all the equipment necessary for solving almost every field service, repair and maintenance problem for contractors working over a big area.

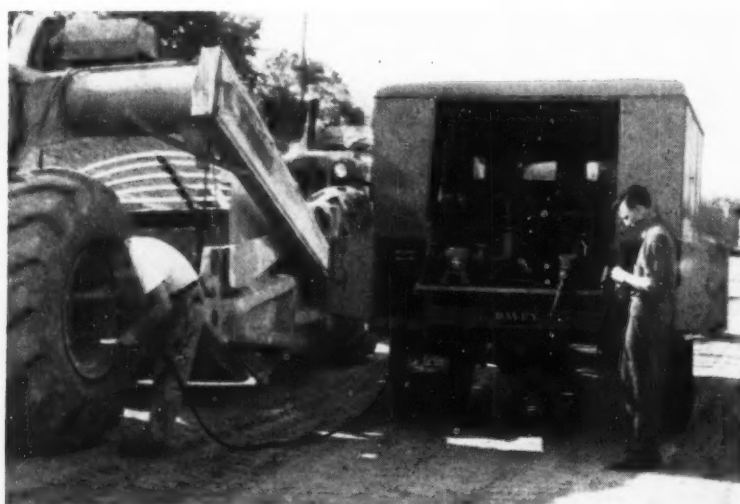
The heart of the unit is a heavy-duty power take-off which is integrated into the truck drive-shaft, transmitting any torque or power

requirements necessary to drive the mounted equipment. A dash-mounted control engages the power take-off quickly and easily by means of a power shift which utilizes engine vacuum.

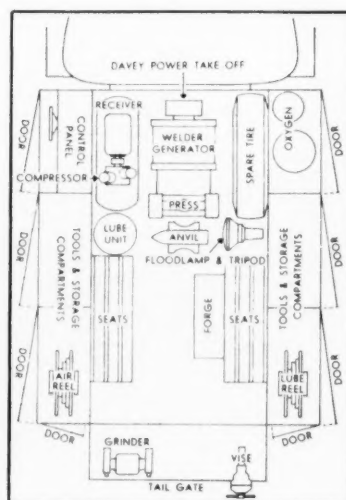
Standard equipment efficiently designed into the unit for compactness includes: Combination welder-generator, arc-welding accessories and supplies, 50-ft welding cables, machinist and mechanics hand tools, electric drills, trouble light, three 50-ft extension

cords, paint spray gun with container, air compressor (150 psi), air-operated lubricant pump, self-winding reel with 40-ft high-pressure hose and grease gun, portable hand-operated blower forge, bench grinder, floodlamps, vise, winch 7,500-lb with 250-ft cable, anvil, bench press with hand-operated hydraulic pump and 10-ton ram, and an assortment of hand tools.

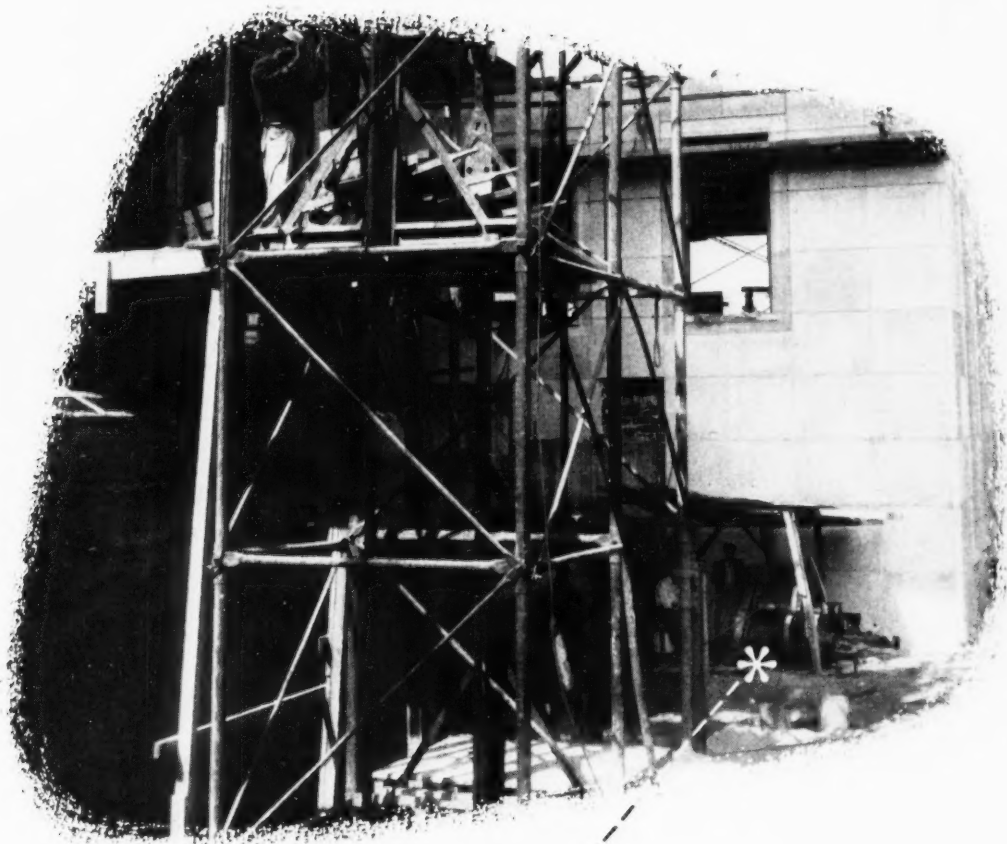
The complete unit is being manufactured by The Davey Compressor Co., Kent, Ohio.



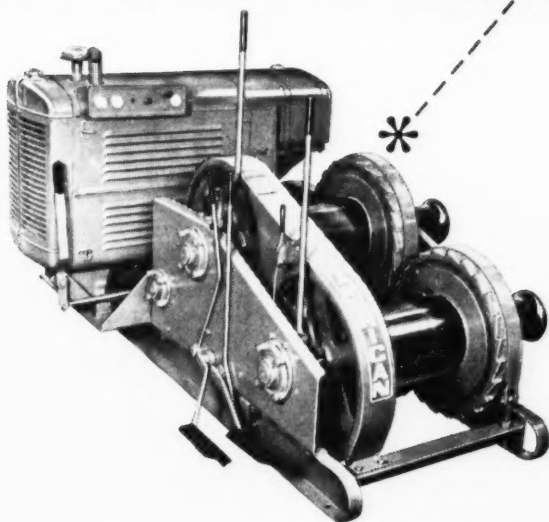
THE UNIT mounted on a short 4-wheel-drive truck can get in and out of rough areas. All equipment is completely under cover, and power is transmitted from a heavy-duty power take-off which is integrated into the truck drive shaft.



HERE'S the planned location of each piece of equipment. In addition to the equipment carried, the unit can carry seven men.



for a lifetime of **smooth, safe stops...**



anti-friction bearings throughout!

Every operator knows anti-friction bearings make his job easier, boost his output. Capacity loads move up and down quickly when all rotating hoist parts run in anti-friction bearings.

Every hoist owner knows anti-friction bearings not only speed the job, but make it *more profitable*. Hoists are easier to operate, withstand the hardest usage *longer*.

American Hoists have long been built to satisfy the most exacting requirements of owner and operator alike. Both know American Hoists deliver maximum output with minimum maintenance. Ask your distributor for details on the complete American Hoist line, the line that leads the field!

American Hoist

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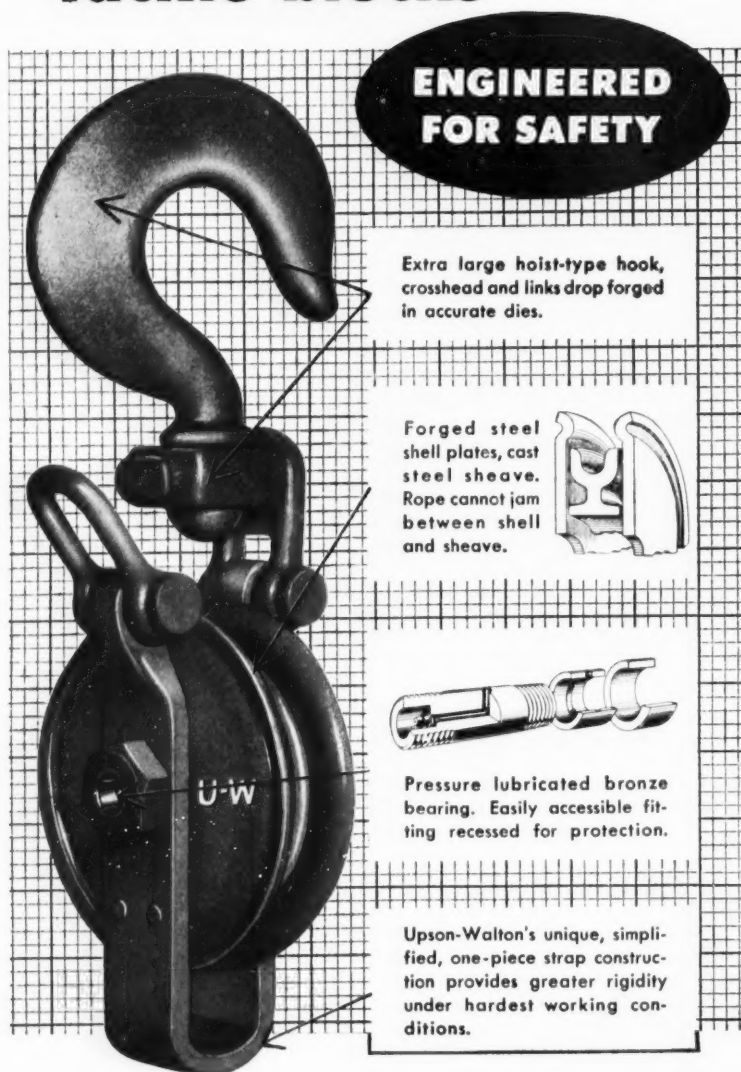
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UPSON-WALTON

tackle blocks



**ENGINEERED
FOR SAFETY**

Extra large hoist-type hook, crosshead and links drop forged in accurate dies.

Forged steel shell plates, cast steel sheave. Rope cannot jam between shell and sheave.



Pressure lubricated bronze bearing. Easily accessible fitting recessed for protection.

Upson-Walton's unique, simplified, one-piece strap construction provides greater rigidity under hardest working conditions.

for EXTRA HEAVY work

**ASK YOUR
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TO SHOW
YOU ONE**

THE Upson-Walton heavy duty trucking snatch block is ruggedly built for the jobs which are beyond the strength of the regular snatch block.

Size	Wire Rope Diameter	Working Load
6"	1/2" — 3/4"	7 tons
8"	3/4" — 7/8"	9 tons

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MANUFACTURERS OF TACKLE BLOCKS, WIRE ROPE, ROPE FITTINGS—ESTABLISHED 1871

Precast Concrete Construction Book

COPIOUS INFORMATION on the precasting and erection of concrete building members is contained in a new volume, "Manual of Precast Concrete Construction," by F. Thomas Collins, a West-Coast engineering and construction consultant. While dealing primarily with flat casting for tilt-up walls, thin-shell precast concrete roof members are also covered.

The techniques of precasting are detailed by numerous typical examples—from planning the casting yard and setting up a construction schedule, to final erection and painting. Understandably, most of the book is devoted to formwork, erection of members and costs of precast construction.

Side forms for various types of wall-panel joints are compared as to cost and ease of forming. This section covers the forms for precasting, as well as those for the poured and gunited joints that join wall panels after erection. Corner, column and pilaster forms are included. How to form for doors and windows in the wall panels is detailed. Forms for sandwich-type panels and for precast beams and girders are mentioned briefly.

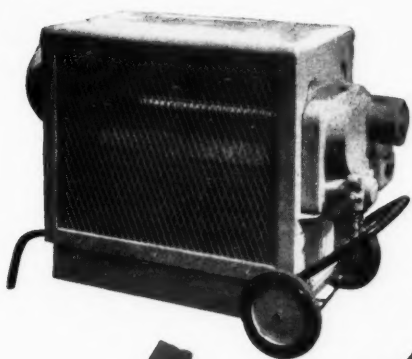
The manual gives approved procedures for handling and erecting the precast units. Some details of hoisting equipment, pick-up inserts, lifting strongbacks, spreaders, rigging and temporary bracing are included. (The author's standard detailed plans for various of these units are listed for sale, at an additional charge.)

The joining of wall slabs to roofs, slabs on grade, and elevated floor slabs is treated in some detail. Methods are shown for floors and roofs of steel, concrete and wood.

Detailed estimates are made for two typical one-story buildings, 60x120 and 80x100. Costs are analyzed for each step in the construction process.

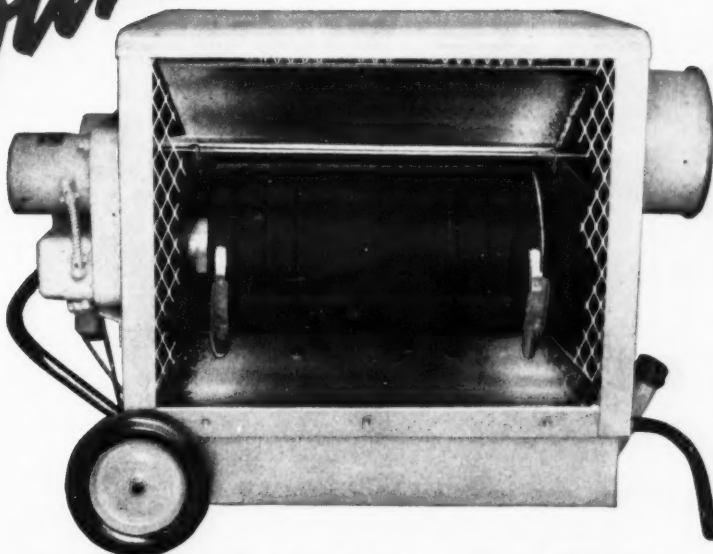
Other chapters include data on the patent situation, bond-breaking agents, and casting surfaces.

The "Manual of Precast Concrete Construction" is a 71-page paper-bound 8 1/2 x 11-in. loose-leaf volume. It can be obtained at \$25 per copy (\$12.50 to students) from F. Thomas Collins & Associates, 921 W. Las Tunas Drive, San Gabriel, Calif.



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**SILENT
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NEW REFLECTED HEAT PERSONNEL HEATER

Here for the first time is a portable heater designed primarily to provide heat for personnel in severe weather when emergency conditions require work to be done outside. Its effective heat is not diverted by wind, rain or snow. Its safe, sure warmth can be supplied at a moment's notice anywhere.

The intense infra-red energy developed by the solar glow flame filter is reflected by stainless steel reflectors which direct these rays (from a very wide angle to a narrow concentrated surface) where they can be most effective. Because of this "directed heat" feature, it is very effective in new construction for drying plaster or paint or for preparing surfaces for such uses. It is also extremely useful for de-icing trucks, buses and locomotive equipment, as the heat can be thrown where it is most needed. It has an air delivery for auxiliary purposes of 1250 cubic feet to be applied at a distant point if desirable. This new heater is a valuable addition to the famous Silent Glow line of portable heating equipment. Get all the facts by sending in the coupon.

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THE SILENT GLOW OIL BURNER CORP.

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Clamshell



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Crane



Pile Driver



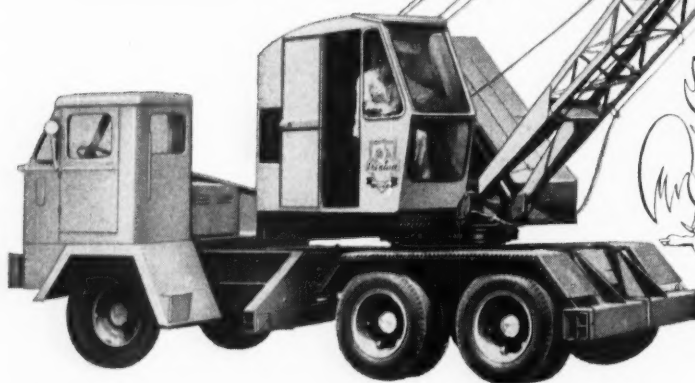
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the latest development in shovel-cranes.

LIFTS 12,000 LBS.!



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Complete, as Illustrated
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Lower price if Crane Car-
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This brand new Crane Carrier, ex-
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This, too, is ALL NEW!

The Great C-35 CRAWLER

5-ton ... $\frac{3}{8}$ cu. yd.



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Complete Crawler Back
Hoe with 30" bucket,
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Now . . . BANTAM Offers Any Type of Mounting You Want

The versatile, job-proved BAN-
TAM which has established en-
viable records of economy on
all kinds of lifting and excavat-
ing jobs everywhere is now
available with a wide choice of
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best suited combination to han-
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Today, you can get a BANTAM
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TAM can be field-mounted on
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now offers the new Model C-35
. . . it's the revolutionary crawler
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work calls for, the complete
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it uses its HEAD to
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YOUR COSTS!**

VIBRO-PLUS ROLLGEAR* internal vibrator

With the patented Rollgear, Vibro-Plus steps up 3600 RPM shaft speed to 11,000 to 15,000 VPM at the head. It accomplishes this high speed without belts, gears or clutches.

Because it vibrates at this super-speed, Vibro-Plus compacts concrete more rapidly, more effectively — which saves money.

Because design is so simple and shaft speed so low, parts wear longer, down-time is shorter, maintenance is less — which saves still more money. Write for bulletin and nearest distributor.



TYPE PRSB
is pneumatically operated, for use when electric or gasoline power are impractical — but shaft and head can be used with these power sources. Comes with 20 or 30 ft. flexible shaft. 1 3/4" — 2-3/16" — 2 3/4" and 4" diameter heads (which never need lubrication). Grinding attachments available.

OUR ENGINEERING DEPT.
will recommend, design and build special equipment for any special purpose.

*Reg. U. S. Pat. Off.

**VIBRO-PLUS
PRODUCTS, INC.**

54-11 QUEENS BLVD., WOODSIDE, 77, N. Y.
WORLD PIONEERS IN APPLIED VIBRATION

Equipment Companies Still Maneuver

MANUFACTURERS of construction equipment are on the prowl: Mergers or acquisition of various companies have been coming comparatively rapidly in what has traditionally been a staid and independent industry. And there are more realignments to come.

Among the latest—and largest—is General Motors Corp.'s purchase of Euclid Road Machinery Co. It follows a long series of rumors that GM was going to jump into the construction equipment field with both feet. As one competitor puts it: "Now it looks as if the Colossus of Roads is aiming to be the Colossus of Off-Roads, too."

The GM-Euclid deal followed on the heels of Buda Co.'s announcement that Allis-Chalmers was negotiating for its purchase. This sale to A-C was approved by Buda stockholders late in September.

Among other changes this year: Westinghouse Air Brake Co. bought R. G. LeTourneau (CM&E, May, p 226); International Harvester Co. announced that it would eventually take over manufacture, distribution, and service of Bucyrus-Erie scrapers and bulldozers, (CM&E, July, p 256); Pettibone Mulliken Corp. acquired Wood Mfg. Co. (asphalt roadbuilding equipment); Autocar Co. was sold to White Motors Co.; and Clark Equipment Co. (lift trucks) bought Ross Carrier and its subsidiary, Michigan Power Shovel Co. At least two other shovel companies are on the market and are ripe for sale. And rumors of other consolidations or purchases are flying thick and fast.

Principle of the Thing

CONDENSED from the AGC Construction Safety News: Safety is not a sleeping pill to make us forgetful of responsibilities, but an alarm clock to awaken us. Safety is not only a pair of steel-toed shoes but also the common sense to wear them; Safety is the thinking and doing of safe things when the safety inspector is not around. Safety is not something we can leave for the other fellow. Safety must become a religion if it is to cut tears, sorrow and the very high cost of accidents.

ALL NEW FASTER SHORE



1. EXTEND TO WITHIN 1" WITH PIN
2. SCREW 1-3 TURNS TO TIGHTEN AND IT'S ALL SET

3 different heads for all jobs

3 sizes 6'-11', 8'-13', 10'-15'-6"

All shores have 5' adjustment range

Built-in nailing plates for fast, easy bracing in either direction

Easily set and adjusted by one man

Heavy duty, high carbon steel

Made by the manufacturers of Waco Steel Scaffolding

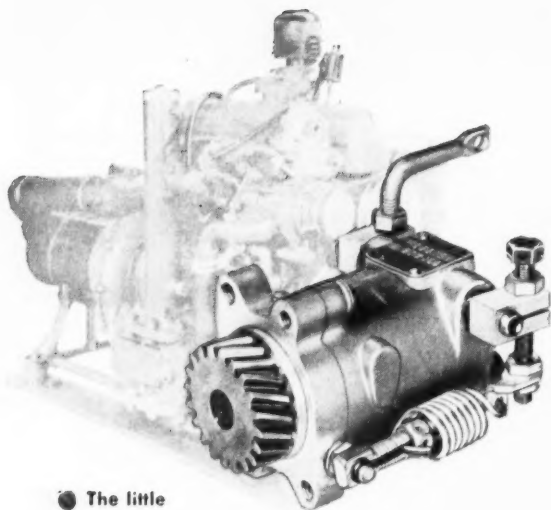
WRITE TODAY
FOR FREE INFORMATION

WACO Manufacturing Company

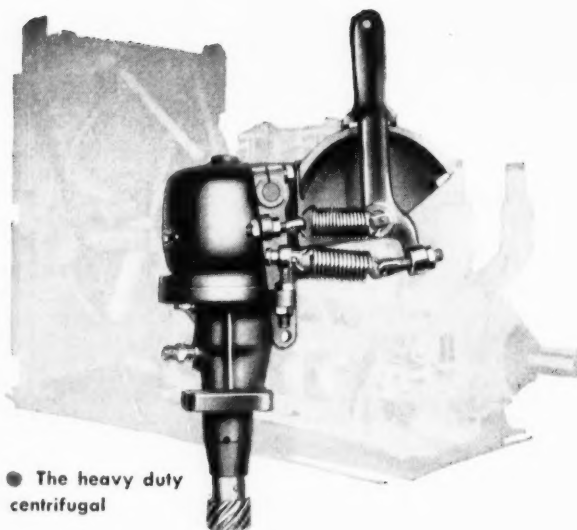
3560 Wooddale Ave.
Minneapolis 16, Minnesota

Canada
Armstrong Iron Works
Windsor, Ontario

West Coast
Waco-May Co.
Los Angeles, Calif.



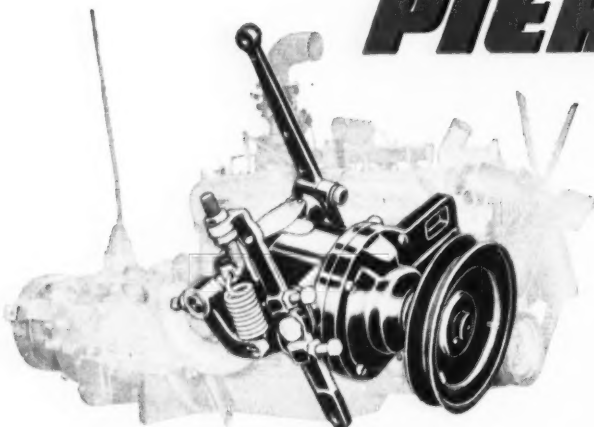
● The little 1400 series



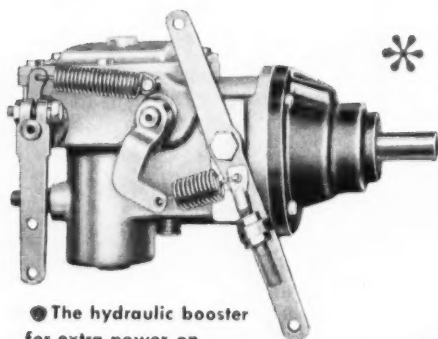
● The heavy duty centrifugal

PIERCE GOVERNORS

preferred for gas (LPG), gasoline and diesel industrial engines...
big, medium and small



● The standard long range 900 series



● The hydraulic booster for extra power on racks and valves

Pierce centrifugal governors are your most economical and efficient control mechanisms for industrial engines . . . from small generator sets to monster power units . . . gas (LPG), gasoline or diesel. For engines requiring extra power to position fuel rack or valve, the Pierce centrifugal with hydraulic booster * (for original equipment only) is ideal! Service is locally available . . . your nearby Pierce Service Station is equipped for all types of Pierce Governors.

Specify PIERCE Centrifugal governors on your engines . . . for economical, thoroughly dependable control in industrial applications.



THE PIERCE GOVERNOR CO., INC.
1622 OHIO AVENUE, ANDERSON, INDIANA
"World's Most Experienced Governor Manufacturer"

SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Cleaver-Brooks Co.: Announces the appointment of the D. E. McCulley Co., Omaha, Neb., as exclusive manufacturers representative for the sale of its self-contained boiler equipment.

Marion Power Shovel Co.: Has appointed two new distributors—Tulsa Equipment Co., Inc. of Tulsa, Okla., and Neff-Thomas Machinery Co. of Miami, Fla.—to handle the sale, servicing and distribution of Marion machines in their territories.

St. Paul Hydraulic Hoist: The following companies have been appointed distributors for St. Paul products in their areas—Utility Body Co., 1530 Wood St., Oakland, Calif.; Sierra Tank and Steel Corp., 2650 E. Fourth St., Reno, Nev.; and H&H Truck Tank Co., 725 Tonnele Ave., Jersey City, N. J.

Hensley Equipment Co.: The following equipment stores were recently appointed exclusive dealers in their areas—Diesel Construction Equipment Co., San Diego, Calif.; and Wilson Equipment & Supply Co., Cheyenne and Casper, Wyo.

KSM Products, Inc.: Has appointed the Johnson Supply Co., 1414 Wazee St., Denver, Colo., as Rocky Mountain area distributor.

Koehring Co.: Opening of a new branch of McIlhany Equipment Co., regional distributor of all types of Koehring construction equipment, at 2104 N. Hamilton St., Richmond, Va., has been announced.

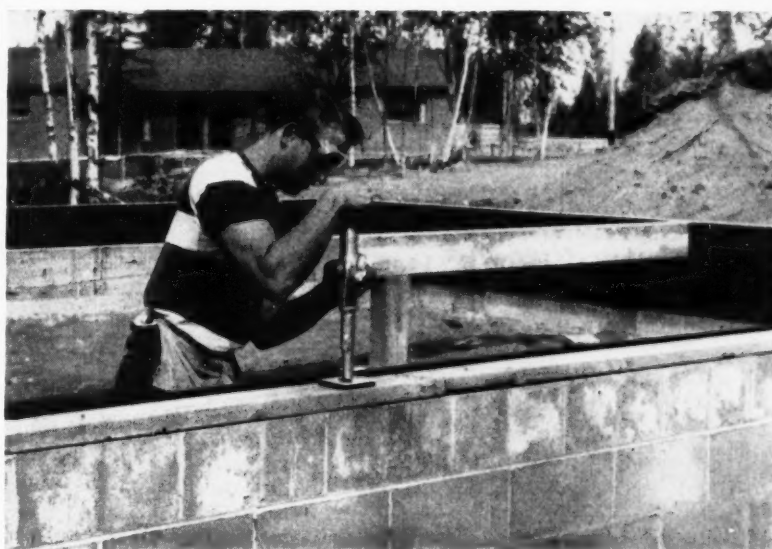
On the Sales Front

Motorola Communications and Electronics, Inc.: Frank W. Walker was recently promoted to regional sales manager. The newly created sales region which Walker will head is composed of Southern California, Arizona and Southeastern Nevada. Offices will be in Los Angeles.

The Heil Co.: Has appointed H. J. Row as sales promotion manager of the Body and Hoist Division.

Findlay Div., Gar Wood Industries: The appointment of Melvin Staben as district manager of the Northwest (Continued on page 162)

fastening costs cut 30%



DRIVE-IT 320 WITH BREAK-OPEN ACTION

This Alaskan builder uses the new DRIVE-IT 320 with Break-Open Action to fasten 2x6 base plates to concrete block. The powder-operated tool "is more economical by at least 30%; results in material and money savings".

Almost all concrete or steel anchorages can be made with more savings and greater strength with DRIVE-IT.



BREAK-OPEN ACTION



ONE POWER LOAD



AUTOMATIC EXTENSION BARREL



SWIVEL SAFETY PAD



2-MOTION FIRING ACTION

NEW DRIVE-IT 320 FEATURES BREAK-OPEN ACTION FOR FAST, EASY LOADING AND EXTRACTION. OTHER JOB-PROVED DRIVE-IT FEATURES ARE:

ONE POWER LOAD. Variable penetration with one strength power load.

AUTOMATIC EXTENSION BARREL. Integral with tool. Extends to fasten in recesses.

SWIVEL SAFETY PAD. Swivels 360° to fasten near adjoining surface. Steel and tough Neoprene for protection.

SAFE TWO-HAND FIRING. Tool must be held against work to operate. Two-motion firing action for safety.

LOW COST DRIVEPINS. Prices are lower on wide range of drivepins.

FOR MORE INFORMATION

MAIL THIS COUPON

POWDER POWER TOOL CORP.
7526 S. W. Macadam Ave., Dept. C
Portland 1, Oregon

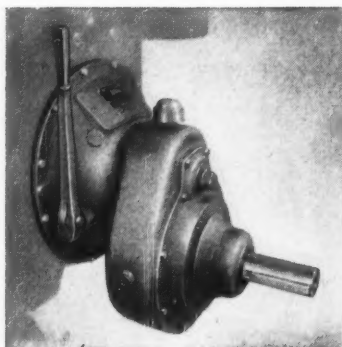
☐ Please send literature on DRIVE-IT "320"
☐ I'd like a demonstration of DRIVE-IT "320"

Name _____

Address _____

City _____ State _____

DRIVE-IT
the original
POWDER-ACTUATED TOOL



FUNK GEAR REDUCTION POWER TAKE-OFFS FOR INDUSTRY AND AGRICULTURE

with the exclusive Straddle Mounted Pinion . . .



FUNK PRODUCTS INCLUDE:

Right-Angle Take-Offs.
Front End Take-Offs.
Jack Shaft Extensions.
Ford Tractor Conversion Kit adapts 6 or V-8 engine, doubles power. (See picture below.)



Here is a new NAA Golden Jubilee Ford Tractor converted with Funk NC Kit, other kits for any Ford Tractor.

This exclusive Funk development assures complete gear tooth contact at all times by providing a pinion with a taper roller bearing support at each end driven by an input shaft with a lubricated floating spline, eliminating misalignment from improper installation or load deflection . . . some of the many reasons why you can expect longer, trouble-free service from FUNK Gear Reductions. Fit all SAE flywheel housings. Special ratios or special adaptations of standard units supplied on small orders. For keeping old equipment on the job economically, write for catalog and prices of Funk Power Take-Offs and Gear Reductions.



FUNK AIRCRAFT CO.

3303 Airport Drive, Coffeyville, Kan.

SALES AND SERVICE . . .

Continued from page 161

area has been announced. In his new position Mr. Staben will cover the states of Washington, Oregon, Montana, Idaho and Wyoming.

Leschen Wire Rope Div., H. K. Porter Co., Inc.: Russel J. Dixon has been appointed general sales manager.

Highway Equipment Co., Inc.: Announces the appointment of John Miller as new southeastern district manager for the company with headquarters in Atlanta.

Power Products Corp.: Appointment of W. L. Nahin as sales manager has been announced.

Alloy Rods Co.: Virgil C. Reed has been appointed field representative for the southeastern and southwestern states. He will make his headquarters at 7216 La Paseo Drive, Houston, Tex.

Flexible Steel Lacing Co.: John A. Marshall has been named to represent the company in Oregon and Washington.

Pioneer Engineering Works, Inc.: Carl R. Rolf has been appointed vice-president in charge of sales of the company.

Blackhawk Mfg. Co.: Marvin J. Wells of Oklahoma City and Robert R. Westbrook, Fort Worth, Tex., have been promoted to territory managers. Mr. Wells covers Kansas, Western Missouri, Oklahoma and the northwestern part of Texas. Mr. Westbrook has the balance of Texas. Mr. Norman Card has been appointed territory manager of Arkansas, western Tennessee, Mississippi and Louisiana. He will headquarter in Memphis, Tenn. David F. Westervelt has been appointed southeastern manager with headquarters in Atlanta, Ga.

Davey Compressor Co.: Appointment of Paul H. Nast as manager of the rock-drill division has been announced. In his new post, Mr. Nast will be in charge of sales, engineering and manufacture of the complete Davey air-tool line.

Wayne Crane Div., American Steel Dredge Co., Inc.: Announces the promotion of Robert H. Little to assistant sales manager.

B. F. Goodrich Co.: P. W. Stansfield has been named manager, industrial tire sales for the Tire & Equipment Division.

Chain Belt Co.: Announces the following changes in personnel—A. R. Abelt has been appointed vice-presi-

(Continued on page 165)



Anxious to please?
Give Wisconsin
Cheese
this Christmas

The fabulous PAUL BUNYAN... \$11.50 Postpaid.

Good eating is your greeting when you give this 7 1/4 lb. assortment of dairyland's tastiest cheeses . . . featuring a mild Swedish-type Nord-Ost, sharp Wisconsin cheddar, mellow May cheese, tangy cheddar cheese food spread, nut-sweet Gruyere-type Swiss and yogurt-flavored wedges, and crocks of delicately flavored wine and brandy cheese food spreads. Here's appetizing family-size enjoyment for the top names on your gift list.

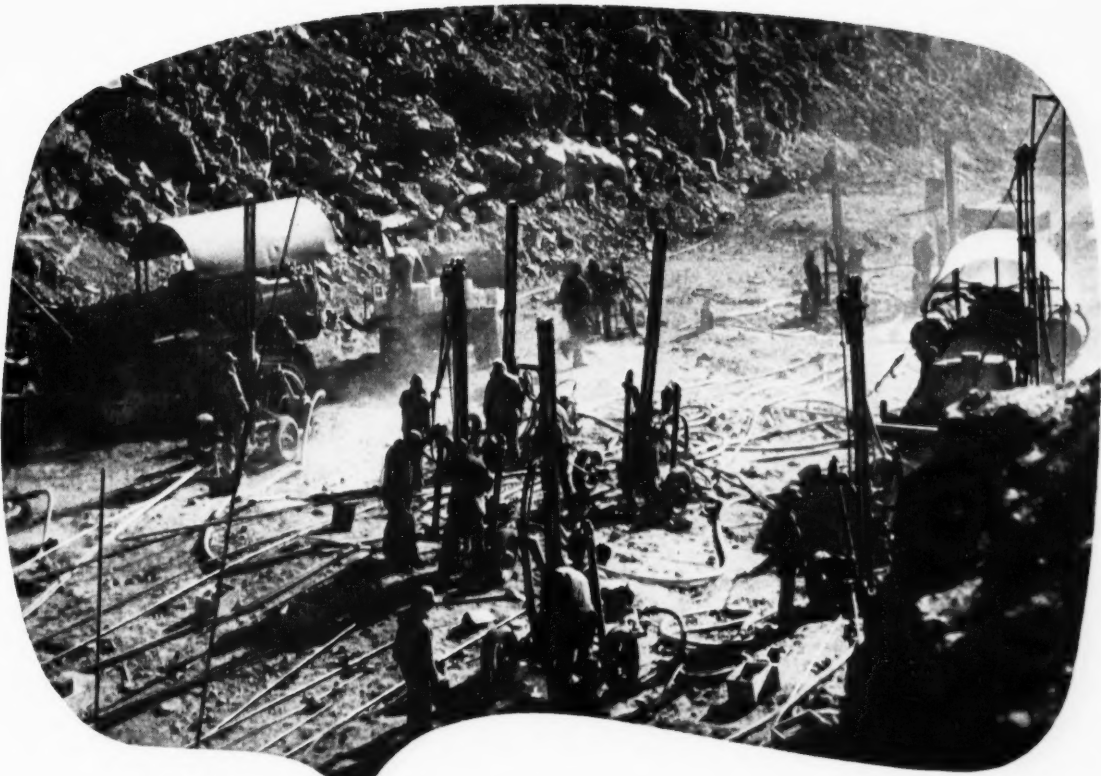


The ESQUIRE... \$7.95 Postpaid.

Eleven delicious varieties . . . 5 1/8 lbs., including smooth flavorful gouda, piquant blue wedges, hickory-smoked and sharp American cheese food rolls, Swiss-type Gruyere, nut-sweet Swiss and richly mild Port Salut spreads, semi-soft Salouette, rich Mel-O-Pure, tangy aged cheddar, and savory Edam.

Send your orders and gift lists to Dept. M.

The WISCONSIN CHEESE BOX
Sturtevant, Wisconsin
CHEESE SPECIALISTS FOR OVER TWO DECADES

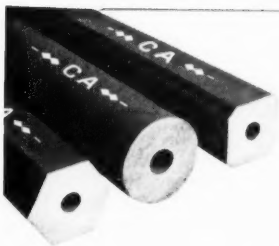


they're using
CRUCIBLE HOLLOW DRILL RODS
 on the Union Pacific Line Change

On this job, Crucible Hollow Drill Rods helped move 2,400,000 cubic yards of rock and make 118 major cuts. The largest cut was a huge bite 165 feet deep through solid granite.

That was the one-year record made on the 42 mile long Union Pacific Line Change, between Cheyenne and Dale Creek, Wyoming. To complete the job, largest since driving the famed golden spike joining East to West in 1869, took a combination of skill and teamwork by the Morrison-Knudsen Company... plus good equipment. And that's why Crucible Hollow Drill Rods were used.

Made to tool steel standards by the world's largest producer of special purpose steels, Crucible Hollow Drill Rods' extra quality means minimum rod breakage and fewer losses of valuable bits. You can be sure of long, uniformly dependable service, lot after lot, when you buy Crucible Hollow Drill Rods.



Visit us at Booth 241, National
 Metal Show, Cleveland, Ohio,
 October 19-23

CRUCIBLE

first name in special purpose steels

53 years of *Fine* steelmaking

HOLLOW DRILL ROD

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • RESISTAL STAINLESS • ALLOY • MAX-EL MACHINERY • SPECIAL PURPOSE STEELS

Correct air entrainment in concrete calls for...

**"positive
control
over all
of the
ingredients"**



**Here's how Mr. Alexander Foster—Vice President of the
Warner Company, Philadelphia, Pennsylvania—puts it:**

“Warner Company, in Philadelphia, is responsible for producing a tremendous quantity of ready-mixed concrete for all types of construction. Warner Company's plants use at least fourteen different brands of cement in a considerable variety of mixes. The company's management realizes the decided advantage of having positive control over *all* of the ingredients. Recognizing the merits of air-entrained concrete and the prime importance of close control of the entrained air in the amounts required for various types of concrete usage, the management has learned by experience the advantage

of the ‘prescription’ method of adding the required amount of air-entraining agent *at the mixer.*”

Construction men everywhere are discovering that the “prescription” technique is the *only* way to produce air-entrained concrete that always lives up to its performance promise.

★ ★ ★

If you have any problems or questions on the use and mixing of air-entrained concrete, a Marquette Service Engineer will be glad to help and advise you—contact any Marquette office.

Marquette Cement

MANUFACTURING COMPANY

SALES OFFICES: Chicago • St. Louis • Memphis • Jackson, Miss. • **PLANTS:** Oglesby, Ill.
Des Moines, Ia. • Cape Girardeau, Mo. • Nashville, Tenn. • Cowan, Tenn. • Brandon, Miss.

PORTLAND • HIGH EARLY STRENGTH • AIR ENTRAINING • MASONRY



SALES AND SERVICE . . .

Continued from page 162

dent, sales; George W. Woodland was named to the newly created position of manager of field forces for the company's industrial divisions; Gilbert J. Schuelke is now sales manager of the chain and transmission division; W. C. Messinger is the newly appointed assistant to A. K. Thomas, divisional manager of the construction machinery division; R. V. Krikorian is appointed to succeed W. C. Messinger as manager of the ordnance division.

Caterpillar Tractor Co.: Orlan Shoopman has been appointed special representative, motor graders.

Euclid Road Machinery Co.: Announces the appointment of Melbourne W. "Skip" Miller as district manager for the following states—Montana, Alberta, Canada, North and South Dakota, exclusive of Fall River, Shannon, Custer, Pennington, Lawrence, Meade, Butte, Harding and Perkins counties.

Crucible Steel Co. of America: Richard J. Rand has been appointed assistant manager of the Cincinnati branch sales office.

Reed Roller Bit Co.: Ray Kensel has been named district sales manager for Cleco Air Tool Division for the Detroit, Cleveland, Cincinnati and Indianapolis area.

Gardner-Denver Co.: C. H. Rieman was recently appointed sales manager of the mining and construction divisions.

International Harvester Co.: The appointment of I. P. "Crip" Payne as manager of Industrial Power sales has been announced. Named as assistant managers of sales were C. E. "Skip" Jones and W. M. Holland.

Galion Iron Works & Mfg. Co.: Porter Little, Jr., has been appointed district representative of rollers and motor graders for Texas.

The Electric Storage Battery Co.: The appointment of L. M. Gay as manager of the Cleveland branch has been announced.

Timken Roller Bearing Co.: Has announced the following promotions in the Steel & Tube Division Sales—Harry B. Lilley as manager of the district office in Detroit; John J. McGrann to manager of the Houston office.

Nordberg Manufacturing Co.: Establishment of a district office in St. Louis, Mo. was announced. Located
(Continued on page 166)



Architect: Marcel Boulicault, St. Louis

Contractor: John B. Gutmann Construction Co., St. Louis

Subcontractors: Columbia Iron Works, Inc., St. Louis

H. A. Dailey, Inc., St. Louis

65,000 sq. ft. Building Erected in 60 Days with LACLEDE CONSTRUCTION STEELS

Laclede Steel service and construction know-how combined to give Ritepoint Company of St. Louis a new permanent-type building in a hurry. The short completion time resulted from using Laclede steel joists, reinforcing bars and welded wire fabric.



LACLEDE STEEL COMPANY

St. Louis, Mo.

Buy Direct from Factory!

CONCRETE SMOOTHIE

Concrete Finisher

"Handiest item any concrete contractor can own!"

LIGHT WEIGHT
Handles big and little jobs easily!

- Powered by 2 h.p. gear-reduction Lauson motor.
- Adaptable to any width. Pictured here with 12 ft. runners
- Easy back and forth motion does beautiful work

All machines guaranteed!
ORDER FROM THIS AD!

\$134.00
F. O. B.

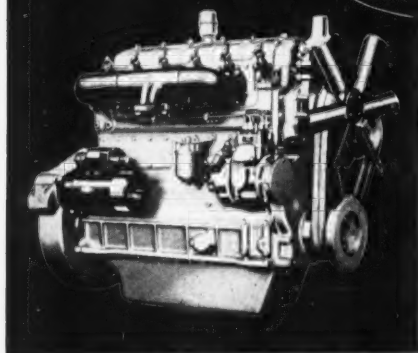
COLUMBUS STEEL FABRICATING CORP.
COLUMBUS, NEBRASKA

Dept. M-2

**HOES TO
HOISTS...
CRANES TO
CRUSHERS...**

WAUKESHA
powers 'em all

**50 to 570 Hp.
DIESEL or
GASOLINE**



135-DKB Diesel Engine—6 cylinders, 4 1/4-in. x 5-in., 426 cu. in. displacement. Max. hp. 147 @ 2800 rpm.

● Specially adapted to general contractors' needs, Waukesha handle every load demand easily and eagerly, and with power to spare. Both the Diesels and gasoline engines are easy to start and operate. Waukesha turn out more work, steadily and speedily. Economical to fuel and maintain. 50 to 570 hp. gasoline or Diesel. Get the complete Waukesha performance story in Bulletin 1079.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
New York • Tulsa • Los Angeles

SALES AND SERVICE ...

Continued from page 165

at 3300 S. Second St., in Nordberg's Busch-Sulzer (Diesel Engine) division plant, the new office will serve crusher, screen and process machinery customers in the South Central and Southwestern states. Harold M. Propp is designated to head the new district organization.

Caterpillar Tractor Co.: Creation of the Engine Division, a new major component of the company, has been announced. The new division will be managed by H. H. Howard, and he will be in charge of the sales of engines to manufacturing customers. A sales promotion department has also been established with W. K. Cox, now advertising manager, as manager of the new department. W. S. Zeigler will manage the domestic sales department.

In the Main Office

Chain Belt Co.: J. C. Merwin has been elected by the Board of Directors to Chairman of the Board. L. B. McKnight was elected to succeed Mr. Merwin as president and chief executive officer of the company.

Special Mention

Thor Power Tool Co.: Production has been started at a newly constructed plant of Armstrong Whitworth & Co. (Pneumatic Tools) Ltd., a Thor subsidiary, at Tynemouth, England, following one of the largest and fastest industrial transfers in Tyneside's history when the entire former factory at Newcastle was transported over a 10-mi route to the new, enlarged plant on the Tyne.

American Bitumuls & Asphalt Co.: Will construct a \$4-million asphalt refinery on a newly acquired, 100-acre industrial tract on the Ohio River at Miami Ford, 12 mi west of Cincinnati. The refinery will be especially designed for refining of asphalt products and manufacture of all standard grades of such products used by the paving industry.

The White Motor Co.: Construction has started in suburban Exton, Pa., on new manufacturing facilities for its recently acquired Autocar Division. White's investment program in Exton, planned to replace Autocar's present plant at Ardmore, Pa., will total more than \$2-million. The new construction is expected to be ready for occupancy early in 1954.

Association Activities

The American Institute of Steel Construction: Will hold its 31st annual convention this year, November 30 to December 4, at the Boca Raton Hotel and Club, Boca Raton, Fla.



250 feet long and weighing 421,000 lbs., this huge 14-unit PIONEER Rock Crushing plant is the biggest of its kind ever built. It consists of a jaw crusher, 3 roll crushers, washing unit, dehydrator, and a number of feeders, conveyors and screens arranged in sequence to provide a plant capable of meeting strict defense requirements for producing specification aggregates from any suitable material found anywhere on the globe.

Last September, when this picture was taken, 35 experts from defense headquarters in the U. S. and Canada had come to Minneapolis to see this giant plant turn out 200 tons of washed material per hour. Similar PIONEER plants are now in operation on every continent, doing their part to protect free nations from aggression.

Big

Big...

That's a handy word when you talk about PIONEER.

Big machinery... big jobs... big ideas.

Construction and mining people all over the world look to Minneapolis when they have *big* problems to solve.

The government, for instance, asked PIONEER to design and deliver 100 giant rock crushing plants like the one shown above... the biggest plants of their kind ever built!

But PIONEER hasn't built its world reputation on bigness alone. The inspiration of its engineers and designers... the skilled craftsmanship of its hardy northern workers... the know-how of its manage-

ment... all these go to make PIONEER equipment the sturdiest and most efficient anywhere obtainable.

Today, PIONEER-built equipment is needed more than ever before. Night or day you'll find things humming at the PIONEER factory. Complete crushing plants, feeders, conveyors, screens, jaw crushers, roll crushers, washing plants, bituminous mixing plants, and bituminous pavers are some of the more important items coming off the PIONEER production line.

With highway and mine construction setting new records, PIONEER will play an important part in building America's future. And as a part of America's Free Enterprise System, it expects that future to be BIG.

PIONEER ENGINEERING WORKS, INC. (SUBSIDIARY OF POOR & COMPANY CHICAGO) **1515 CENTRAL AVE., MINNEAPOLIS, MINN.**

The Reader *His Mark*

THE ABC that appears in the symbol at the top of this page stands for Audit Bureau of Circulations. The symbol itself is an emblem of cooperation, in which every subscriber to this magazine has an interest.

The Audit Bureau of Circulations is a voluntary, non-profit, cooperative association. It was founded in 1914 and now consists of 3450 advertisers, advertising agencies and publishers in the United States and Canada. This magazine is proud to be a member.

ABC originally was set up to help take the racket out of publishing, to eliminate the waste and guesswork then so prevalent in publishing and advertising, to establish order and confidence in place of the misunderstanding and misrepresentation that arose from unverified circulation claims and dubious circulation practices. Its mission was to protect the interests of both readers and advertisers.

THIS IT DID by first defining the term "paid circulation." Then it established standards and rules to govern subscription sales practices and records. Finally it set up an auditing organization to verify the claims and report the facts concerning the circulation of each member publication. It now maintains on that job a working staff of sixty-five full-time auditors. So the ABC symbol has become the hallmark of circulation standards and advertising values. Each member publication must maintain those standards if it wishes to retain its membership and display the ABC symbol.

This ABC audit is no perfunctory affair. When a business publication, such as this one, becomes a member of the Bureau, it agrees that the auditors shall have "the right of access to all books and records." Their inspection, therefore, may cover any part of its operations. Original subscription orders, payments from subscribers, paper purchases, postal receipts, arrears of payments, and many more items are painstakingly checked by the auditors. In many instances they

go behind the records to seek verification from subscribers themselves as to the terms of their subscriptions.

IN DOING ITS JOB, ABC has created many values for both publishers and readers as well as for advertisers. That is because the publication that becomes a member of ABC thereby offers the strongest possible guarantee of its primary devotion to the interests of its readers. The function of a business magazine is to be useful to its readers. When this service is rendered by an ABC publication, it is constantly subject to the practical test of reader acceptance and approval. As each subscriber has the right to purchase or refrain from purchasing an ABC publication, that collective right confers upon the readers the power to say whether or not the publication will survive. Thus the report on its ABC audit provides the most direct assurance that a publication stays in business only because of a voluntary demand by readers who find its editorial service responsive to their needs.

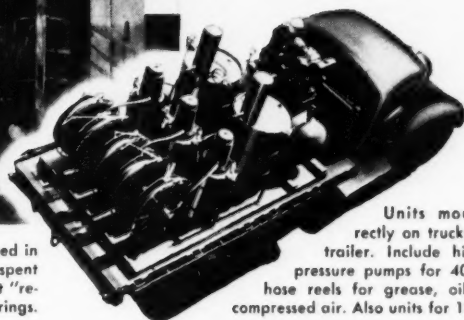
Naturally, the editor of each business publication follows closely the score thus racked up by his paper in its ABC reports. In the scope and tone of his editorial coverage and treatment, in the selection and presentation of his editorial content, he must constantly labor to maintain and enhance the readers' acceptance of his efforts. That is why the editorial standards established by ABC publications set the editorial standards for all publishing. That is how the ABC constantly stimulates its member publications to become even more useful to their readers.

AND THAT IS WHY the ABC symbol has become the Mark of the Reader, a constant reminder that his willingness to pay for an ABC publication is the acid test of its value both to him and to its advertisers.

McGraw-Hill Publishing Company



All rolling equipment is rapidly serviced in the field, saving the time otherwise spent on trips to the shop. Lubricant is kept "refinery clean." No dust or grit in bearings.



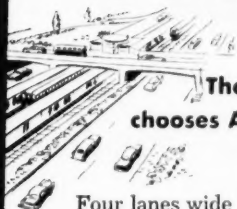
Units mount directly on truck bed or trailer. Include high and low pressure pumps for 400 lb. drums, hose reels for grease, oil, water and compressed air. Also units for 100 lb. drums.



Here a McQueen owned Alemite Portable Service Station is greasing a track roller on a bulldozer. Portable Service Stations bring on-the-spot lubrication to all equipment.

how Alemite "*Friction Fighters*" guard the machines...

DIGGING A BED FOR A \$92,000,000 SUPER HIGHWAY



**Thomas McQueen Company
chooses Alemite portable service station
for Chicago project**

Four lanes wide each way, with room in the middle for an open subway. Running all the way from downtown Chicago to the city limits—without a stop light or a cross street—because it is "down in the ditch," below the level of regular streets. That's the Congress Street Super Highway now under construction in Chicago.

Faced with the tremendous task of earth moving and construction involved, plus a tight time schedule, the Thomas McQueen Company, a prime contractor on the job, turned to Alemite Portable Service Stations to protect vital equipment—and to save these *three* ways—

- 1. SAVE TIME!** By bringing complete power lubrication to all equipment right on the job—safely, efficiently.
- 2. SAVE MONEY!** By cutting expensive lubrication "downtime"—increasing output of both men and machines—and slashing operating and lubrication costs.
- 3. SAVE EQUIPMENT!** By greatly reducing the possibility of costly bearing failure—keeping rigs running smoother longer.

**Get these four services with Alemite
portable service stations**



Fast, easy lubrication of track rolls and fittings.



No oil wasted—use exact amounts of lube desired.

Quick filling of gear housings, transmissions, final drives.



Air line equipment for tire inflating, air jet cleaning.



ALEMITE

A PRODUCT OF
SW
STANDARD
WALSH

ALEMITE, Dept. F-103
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BIGGER LOADS EVERY TRIP...

You get heaped loads faster with a Bucyrus-Erie scraper's boiling-action loading. This has been proved time and time again in actual field tests. The loading action breaks up big chunks to give you a compact and uniform fill, and extra pounds of dirt in every cubic yard.

MORE TRIPS PER DAY...

* Bucyrus-Erie scraper and TD-24 tractor

Big tires, low center of gravity and increased all around stability give you the flotation and maneuvering ability for extra trips every working day. The streamlined gooseneck permits short turns. Dumping is quick and clean with positive rolling ejection. It all adds up to faster hauling cycles... and more dirt moved per day.

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ERIE**

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE, WISCONSIN

See your International Industrial Tractor Distributor soon for all the facts about the Big Red Team... it will pay you to use the equipment that delivers the most paydirt for your money.

THREE **B**-TYPE SCRAPERS TO CHOOSE FROM

Model	Capacity	
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B-250	22 cu. yd.	27½ cu. yd.
B-170A	16 cu. yd.	21 cu. yd.
B-113	10 cu. yd.	14 cu. yd.

**SEE YOUR
INTERNATIONAL
INDUSTRIAL TRACTOR
DISTRIBUTOR**

CONSTRUCTION EQUIPMENT NEWS



Will Load Frozen Material

This Lessmann Loader, with its hydraulic crowding feature, exerts a forward thrust of 15,000 lb even at a standstill. This feature, according to the manufacturer, permits the shovel to load frozen sand and aggregate and dig in hard or compacted soils. Bucket sizes range from $\frac{3}{4}$ to $1\frac{1}{4}$ cu yd and are easily interchangeable.—Lessmann Mfg. Co., Des Moines, Iowa



Low-Cost Portable Conveyor

This is a sturdily built portable conveyor that has a power-operated safety screw lift and lowering device. It will raise to any angle and is available in four sizes. It has removable rubber cleats every 60 in. on a 3-ply corrugated belt, and will fold in half for easy storage.—Frank A. Kremser & Sons, 3435 N. 5th St., Philadelphia 40, Pa.



Automatic Stud Marker

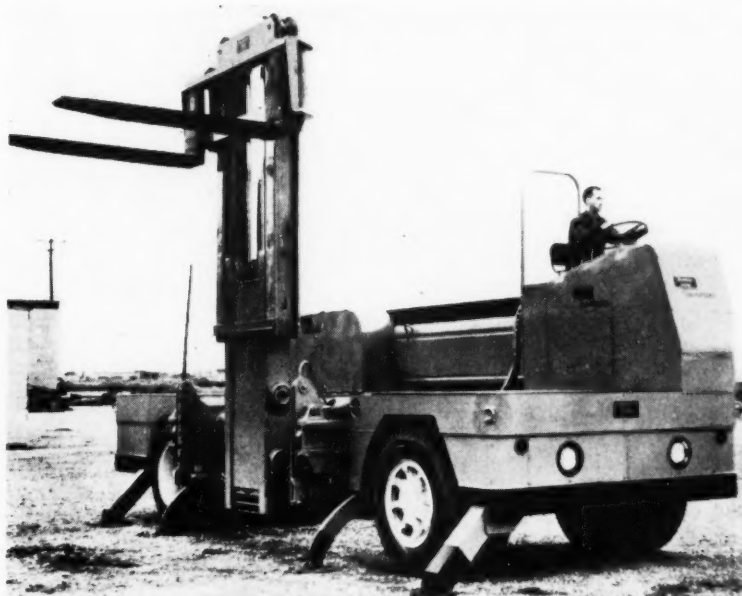
A new pressure sensitive tape for the building and construction trade that automatically marks stud, joist and rafter locations is now available. It comes in 360-ft by $\frac{1}{2}$ -in. rolls and can be applied either by hand or by a special applicator. It requires no wetting agent.—Minnesota Mining and Mfg. Co., St. Paul, Minn.



Concrete Smoothie

This Concrete Smoothie can level concrete slabs quicker and better, according to the manufacturer. Equipped with a 2-hp gear reduction motor, working through an eccentric, it activates the runners in a back-and-forth motion, while the operator pulls the whole device across the job.—Columbus Steel Fabricating Co., Columbus, Neb.

On-the-Job Previews of Machinery, Tools and Equipment



15-Ton Capacity Lift Truck

Called the Traveloader, this unique combination side-loading fork truck and load carrier can pick up a 30,000-lb load and move it at speeds up to 30 mph. When the machine is used to stack or unstack material, it gains stability through

the use of hydraulically operated stabilizing jacks. Picking up the load from the side and hauling it lengthwise, the unit requires only a 12-ft width. It will lift up to 12 ft.—**The Baker-Rauling Co., Cleveland, Ohio**



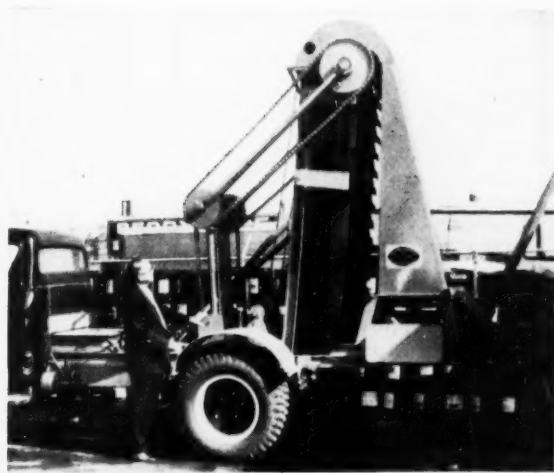
Small-Size Mixer

Available in either gas or electric powered models, the new Hoe-Boy Mixer is only 29 in. wide. Capacities range from 3½ to 4½ cu ft, and charging heights are 34 and 36½ in.—**Construction Machinery Co., Waterloo, Iowa**



Improved Pneumatic Saw

Using a reciprocating double saw-blade principle, the Wright saw, Model AS-221, employs a number of new improvements. Now it has a hard chrome-plated cylinder, locked-in pinion shaft, oversize bearings and stronger and easier to sharpen saber-type saw blades.—**Wright Power Saw and Tool Corp., Stratford, Conn.**



Truck-Mounted Ditcher

A new model truck-mounted Earthripper ditching machine features a jack-knife boom that is raised and lowered hydraulically. The new design reduces the head room of the machine, and the boom permits extending the bucket line at an angle behind the machine to start the ditch flush against walls, etc. It will dig ditches from 8 to 24 in. wide and down to 6 ft.

AS INSPIRED AS A RAINBOW



KERN PENTAGONAL PRISMS

Long the inspiration of mankind the rainbow is a symbol of nature's perfection. With their eye on that rainbow, Kern designers using traditional Kern craftsmanship have always sort instruments as near perfection as man's hand could achieve. Kern pentagonal prisms are just one example of Kern's inspired instrument leadership. Effort savers, time savers they attach easily to lanyard or plumbing rod.

Two models are available: the No. 118, a double pentaprism, allowing simultaneous sights left and right and straight ahead; and the No. 119A with a single pentaprism in a revolving case. Complete with protective zipper type leather case. Write today for complete specifications and descriptive literature.

Complete Service Department
Factory Trained Personnel

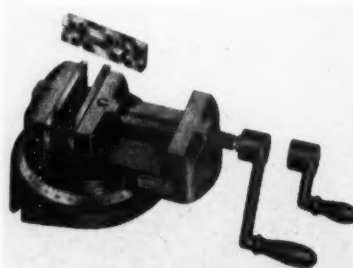
**Kern Surveying Instrument
Division**

PAUL REINHART CO., INC.
70 Beaver Street, New York City

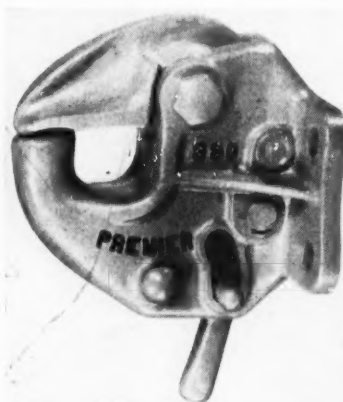
EQUIPMENT NEWS ...

Continued from page 173

Digging speeds are up to 44 fpm. Road speed of the unit is limited only to the prime mover. Power for the Earthripper comes from the truck motor. — **Owen - Pewthers Mfg. Co., 2600 Nottingham, Houston, Tex.**

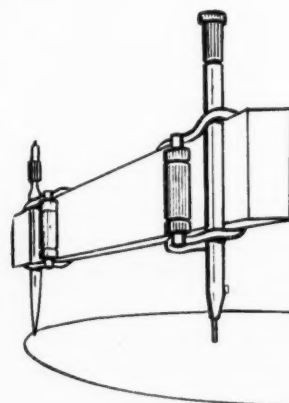


MILLING VISE—A vibration free 6-in. milling vise giving maximum rigidity, yet only secured to the base by three bolts, is now being marketed. The swivel base is graduated at a 45-deg angle. The movable jaw is secured by a slide plate and can be locked after the work is clamped in position. Standard equipment on this vise is three hard-faced jaw plates. — **Kenco Mfg. Co., Los Angeles, Calif.**



TRUCK-TRAILER HITCH — The Premier No. 380, a medium-duty hitch is a solid pintle-type hitch designed to accommodate a 2-in. drawbar eye. It has a breaking strength of more than 90,000 lb and weighs only 27 lb. Outstanding feature of this model, according to the manufacturer, is a new type locking mechanism which makes it impossible to have false locking. The latch will raise to the open position automatically, if locking is not completed. If the latch stays down, the hitch is securely locked. — **Premier Mfg. Co., 409 S. W. 13th Ave., Portland, Ore.**

CIRCLES UNLIMITED



**Kern
AARAU**



MOD. #1102

More than a match for any problem concerning the circle, Kern beam compasses provide an easy solution to the problem of the larger circle. For the Kern beam compass embodies the same traditional know-how and craftsmanship which has brought the Kern name the highest tributes in the drafting instrument field. Manufactured for really rugged use these compasses are tough and yet are capable of adjustments within 0.118 ins. of any chosen measurement. By adding additional sections, the rod can be extended to any length desired.

SEE THE COMPLETE KERN LINE

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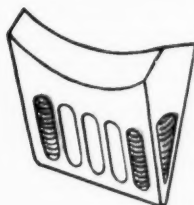
BORDEN & RILEY PAPER CO.
60 E. 11 Street, New York City



THESE REPOINTERS ARE
wear-conditioned

Because they are **AMSCO**
"Wear-Sharp"* Repointers
that stay sharper with use...

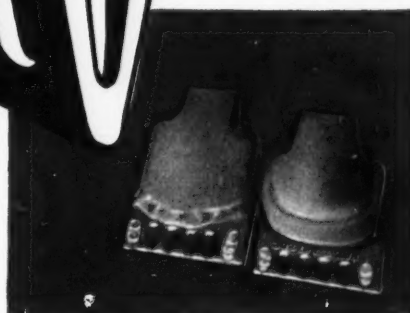
Service life plus! The combination of Amsco Manganese Steel and the hardness of AMSCOATING with Amsco Hardfacing electrodes—gives you a tooth that wears evenly and stays sharp longer.



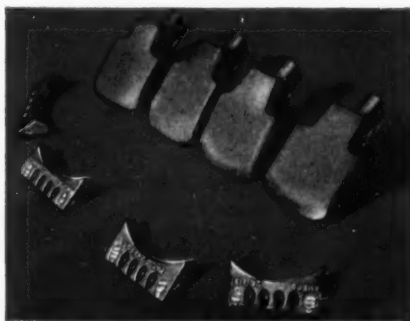
Note that only certain grooves (shown in red at left) are Amscoated—the grooves on the outside and the one on each end. This is the area where ordinary teeth wear fastest. The hardened corners on the "Wear-Sharp" equalize wear along the entire cutting edge and eliminate rounded, blunted corners that cut digging speed and waste power.

Field reports indicate that "Wear-Sharp" repointers will give as high as six times the life of other teeth.

In these photographs at right of a typical case history, old repointers lasted from three to four days. Amsco "Wear-Sharp" repointers lasted 32 days—eight times the service life of the repointers previously used.



"Wear-Sharp" repointers installed on two dipper teeth showing condition of old teeth.



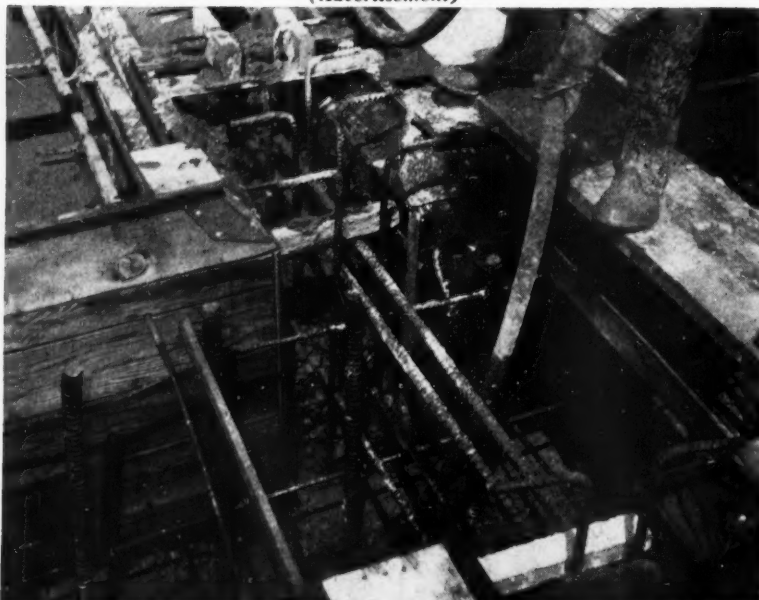
Notice the even wear on these teeth after 257 hours of use with "Wear-Sharp" repointers used. New "Wear-Sharps" are ready for installation.

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COMPANY

AMERICAN MANGANESE STEEL DIVISION

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Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.



PROPER VIBRATION AND GOOD FORMS used in this well-planned box girder intersection make it easy to produce the best possible concrete. Good vibration technique is simple with good equipment, and . . .

Vibration Know-How Produces Better Concrete the Easy Way

One of the many ways experienced concrete foremen get maximum benefit from vibration is by planning concrete placement so each new dump is backed into a previous dump. This results in a smooth surface (no rock pockets) with maximum bond and greater strength. In the above photo the workman has just finished vibrating a dump at the center of a box girder intersection. As each succeeding dump is placed he will vibrate from the center outward, working it into concrete previously placed in the side members.

Appearance of sheen on the surface of the concrete gives visual indication that vibration is complete. With the modern high frequency vibrators pioneered by VIBER this requires only about 10 to 30 seconds, depending on the characteristics of the concrete.

• **Vibrator Operators** soon develop a "feel" which tells them the exact condition of concrete during vibration without seeing it. An experienced operator depends on this "feel" and the sound of his vibrator more than on the appearance of the concrete to tell him when vibration is completed.

Experienced operators describe the feel of concrete when the vibrator is first inserted as "rough" and "rocky." In a matter of seconds it "smooths out" and becomes "creamy," at which point vibration is complete and the unit may be removed from the concrete.

• **Good Forming** and proper vibration are essential where finished appearance is important, as it was on this overpass built by Erickson, Phillips, and Weisberg as part of the East Bay Freeway in Oakland, California. Tight forms made of well-seasoned lumber adequately braced can take full advantage of vibration to produce smooth, rock pocket-free concrete. VIBER'S replaceable rubber tipped vibrators are specially designed to prevent any damage to such forms, which might cause blemishes on the finished concrete surface.

• **For The Complete Story** on vibration know-how or further information on VIBER'S complete line of internal and external vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, California. Dept. 68.



BLADE RAISED AND LOWERED HYDRAULICALLY—Claiming that the major cost factor in concrete sawing is the diamond blade, Ever-ready engineers have designed a new concrete saw with a hydraulic control for lowering the blade as a means of providing longer blade life. This new blade control, called Hydra-Eze, permits the operator to lower the blade gently into the cut at a controlled rate of speed. With a couple of short strokes of the hydraulic pump handle, the operator can lift the blade straight out of the cut with no twisting or binding.—Ever-ready BrikSaw Co., Dept. 230, 1509 S. Michigan Blvd., Chicago, Ill.

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LIDGERWOOD-MUNDY
CORPORATION**

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Hoists Carpullers

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CORPORATION**

**MAIN OFFICE AND WORKS
SUPERIOR, WISC.**

New York Office
7 Dey Street, New York, N. Y.

They're on the right track! Mr. G. G. McAfee (left), official of Winston Brothers Company, and Mr. Tom Gearhart, Standard's Automotive Engineer, have worked closely together to make "molehills" out of mountainous lubrication jobs.



They made "Molehills out of Mountains!"

To bring water from the Colorado River to the eastern plains of Colorado, men and machines have driven a 13-mile tunnel through the Rockies, hacked out vast reservoirs, and built great dams of earth and rock fill. They have literally made "molehills out of mountains!"

Winston Brothers Company, Constructors and Engineers, of Minneapolis, has played a major role in this vast construction project. Important to the successful operation of Winston Brothers' wide array of equipment has been Standard Oil's fleet lubrication service and the performance of STANOLUBE HD-M Motor Oil. Despite continuous operation of equipment, severe overloads, high engine speeds, and exposure to dust, sand, and water; STANOLUBE HD-M has kept engines clean

and protected against wear. A minimum of maintenance has helped Winston Brothers keep equipment working on a basis of two 8-hour shifts, 6 days a week.

Standard's fleet lubrication service has accomplished the imposing job of supplying the right lubricants for the right jobs right on schedule. A Standard Oil Automotive Engineer has worked closely with Winston Brothers to give them help when they needed it.

You can put Standard Oil's fleet lubrication service and STANOLUBE HD-M to work for you by phoning your local Standard Oil office. Or write: Standard Oil Company, 910 S. Michigan Avenue, Chicago 80, Illinois.

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(Indiana)



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Right off the press! Our new CHAMPION WELDING Catalog describes the full line of CHAMPION Arc Welding Electrodes and Gas Welding Rods for all applications.

Here are 40 pages of vital information, answering welding questions which have been bothering you for a long time.

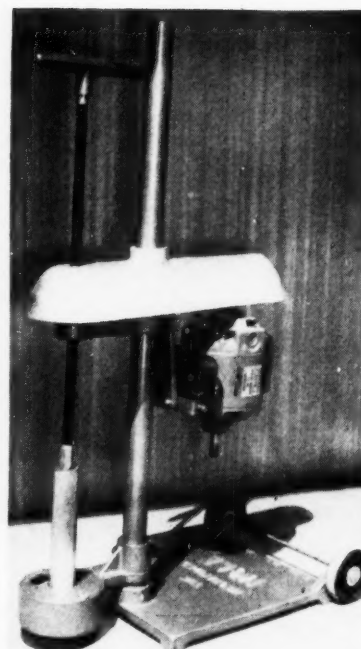
For CHAMPION performance you need a Champion electrode . . . why use ordinary electrodes when CHAMPIONS cost no more?

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CLEVELAND, OHIO
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THE CHAMPION RIVET CO.
CLEVELAND 5, OHIO • East Chicago, Ind.



HOLES BY MOLE—A new machine called the Mole, for drilling vertical holes up to 6 in. in dia in concrete and masonry work, is said to be of particular interest to contractors, builders and maintenance men because of its economical features. It's claimed the drills for this machine cost only one-tenth the price of conventional carbide-tipped drills, yet require no resharpener after use. It will drill to a depth of 18 in.—**Molco Drilling Machines, Inc., 1100 20th St. N.W., Washington, D. C.**

**SERVICISED PRODUCTS
for TILT-UP and PRE-CAST
CONSTRUCTION**

Cementone

**SPONGE RUBBER
JOINT FILLER**

- Matches color of concrete
- Fully resilient—non-extruding
- Made in any degree of compressibility
- Supplied in any thickness, length



Seal tilt-up joints with resilient, non-extruding Serviced Sponge Rubber Joint Filler. May be cemented to concrete panel before being placed to speed erection and control compression of the joint. Serviced Calk-Crete caulking compound recommended to seal recessed joints when they are specified.

**Curing and
Separation**

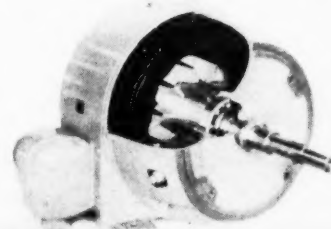
COMPOUNDS

Three Types:

- Curing Compound and Separation Membrane
- Separation Membrane for surfaces to be painted
- Separation Membrane

Servicised Curing Compounds and Separation Membranes are easily sprayed or painted on . . . are made in types to meet every requirement. All types meet ALL specifications. Positive separation or bond-breaking speeds construction . . . reduces costs.

Write for descriptive
Catalog on Serviced
Products. No obligation.



CLOSE-COUPLED PUMP MOTOR

—Designed specifically for use with centrifugal pumps, a new 60-hp close-coupled pump motor has been recently developed. It eliminates shaft alignment or pump-mounting problems by supporting the pump on its NEMA style C mounting bracket. A step shaft, with special diameter shoulder and tapped hole for mounting the impeller, has all ground diameters for precision assembly and sealing against leakage. A solid, closed flange on the adapter bracket prevents entrance of the pumped liquid into the motor.—**U. S. Electrical Motors, Inc., Box 2058, Terminal Annex, Los Angeles 54, Calif.**

SERVICISED QUALITY PRODUCTS
SERVICISED PRODUCTS CORP.
6051 W. 65TH STREET • CHICAGO 38, ILLINOIS

**EASIEST
WAY OUT OF
A RUT**

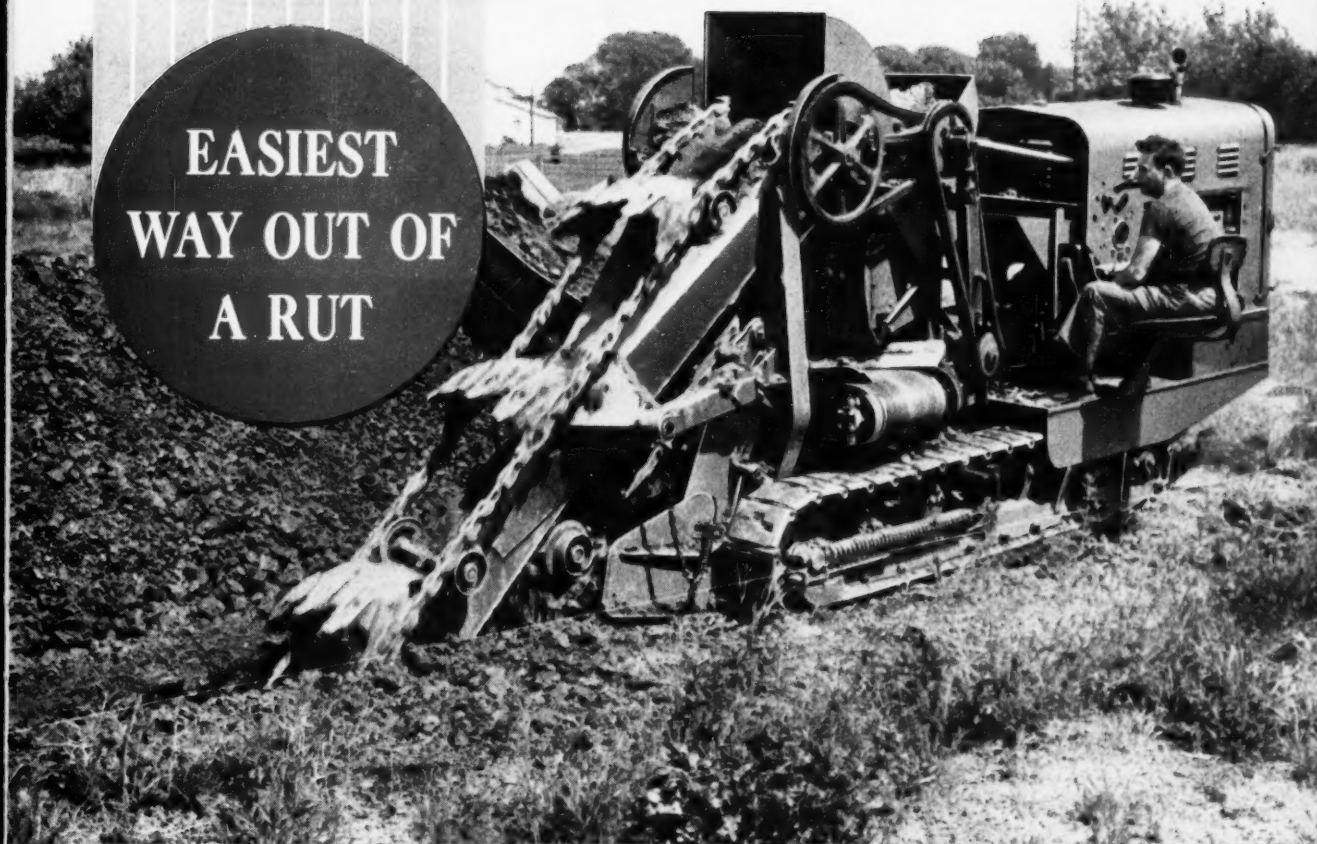
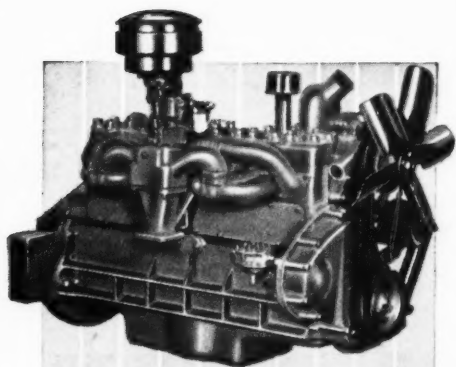


Photo Courtesy Gar Wood Industries, Inc., Findlay Division, Findlay, Ohio

*Pedigreed Horsepower
digs ditch;
carries dirt away,
moves ditcher!*



Without ever moving from his seat, this operator can dig a ditch eight feet deep and up to twenty-four inches wide. With an individually controlled clutch and brake for each crawler, he can dig straight as an arrow or curved as nicely as you please. With positive-pressure hydraulic controls holding the boom at the desired depth, he can easily undercut pipes or other obstructions, dig right up to foundations. Forward or reverse, the operator can select from a large number of digging speeds . . . going forward, he can dig up to nineteen feet per minute.

The plain fact is, this operator has it pretty good . . . the simplified controls of his Buckeye General Utility Ditcher and the Model 8 Chrysler Industrial Engine powering excavator, dirt conveyor and traction members

were practically made for each other. For this manufacturer, like others, selects his Chrysler Engines equipped to meet his needs. Standard or gýrol Fluid Coupling, Torque Converter, standard or special dust-resistant air cleaner, gasoline, propane or natural-gas burning carburetors, fungus-treated or corrosion-resistant electrical systems, all of these were among the optional equipment available for his selection.

Chrysler Industrial Power is not expensive. Production-line methods adapted to specialized industrial engine building provide a custom-built engine at mass production prices.

See a Chrysler Industrial Engine Dealer for your needs, or write us direct: **Department 910, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.**

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WITH A PEDIGREE



GET THE PROFIT MAKING ADVANTAGES OF THE TORQUE CONVERTER NOW in a MANITOWOC

Get that extra power, extra speed, extra smoothness that means extra yardage, now, with a Torque Converter driven Manitowoc excavator.

No other machine like it. Gives you more power when you need it, more bail pull in tough going — smoother, faster acceleration throughout the entire cycle. Enables you to handle bigger loads, shock loads, jars and jolts without damage to mechanism.

And when it comes to rock, you'll hardly believe your eyes. It "slugs" right through, like the old steam powered rigs. It's the greatest advancement in shovel history — and it's yours now, today, in the Manitowoc line. Backed by over 12 years' experience—now in hundreds of Manitowocs. Send for details. Manitowoc Engineering Corp., Manitowoc, Wisconsin.

BALANCED POWER *

Engine operates at maximum efficiency at all times — full engine power for full loads — just enough power for light loads — automatically selected. Engine cannot be stalled — no delays waiting for engine to pick up speed.

SMOOTHER OPERATION

Oil cushion absorbs jolts and jars. Saves cables, clutches, gears and assemblies. Less down time means more yardage.

PRECISE CONTROL

"Fraction of inch" control by either hand throttle or foot accelerator, without slipping clutches or shifting speeds. Makes an expert out of an average operator. Ideal for crane service, setting steel and stone, and general erection work.

MANITOWOC

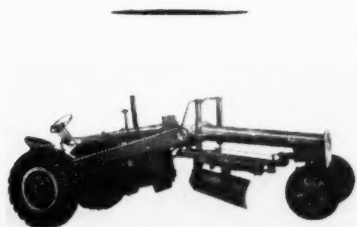
Speed Crane

SHOVELS 1-5 YD. CRANES 18-100 TON

SCREED WITH RETRACTABLE WHEELS—A new extra-rigid light-weight screed with retractable wheels has high frequency vibration up to 9,600 vibrations per min, which helps provide uniform compaction over the entire length of the longest screed beam. The screeds are available from 6 to 36 ft in length. Test slabs up to 27 in. have been successfully compacted with the new screed which is powered with a 2½-hp Model 8 Briggs and Stratton engine. The manufacturer claims the increase in height of the screed beam web by 2 in. results in two important advantages: (1) It eliminates the need for the former heavy welded box-type section on the flange of the beam which results in lighter weight;

(2) It increases rigidity assuring users a more accurate strike-off than ever before possible. The new wheels allow the contractor to roll the screed back easily for as many passes as

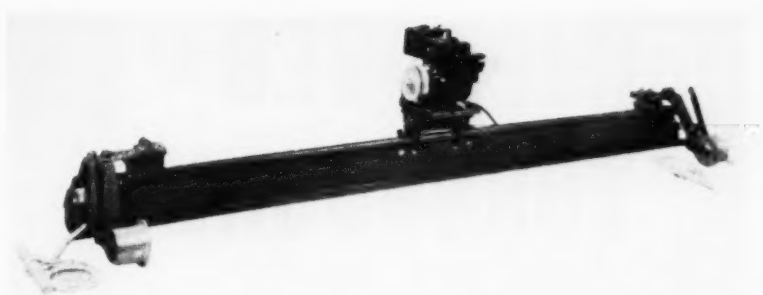
desired. With the lever pushed forward the screed beam is placed in operating position on the form ready for another pass.—Master Vibrator Co., Dayton, Ohio



LOW-COST GRADER—A new low-cost grader, engineered for Case tractors, has just been announced by the M-B Corporation of New Holland, Wis. Built along the lines of larger motor graders, this handy, compact unit will handle many grading and maintenance jobs. The grader may be attached or removed in less than an hour, leaving the tractor available for other jobs. A number of attachments such as ¾-yd front-mounted shovel, berm leveler, snow plows, scarifier and bulldozer blade are available for year-round utility.—M-B Corp., New Holland, Wis.



DRILL CONVERTER—Here's a ½-in. chuck with a ¼-in. adapter which will convert your ¼-in. drill into a full ½-in. capacity electric drill. You simply thrust the ¼-in. adapter end into the ½-in. chuck and tighten it up. It's moderately priced at \$2.95.—Goodmark, Inc., 21 E. 2nd St., Dayton 1, Ohio

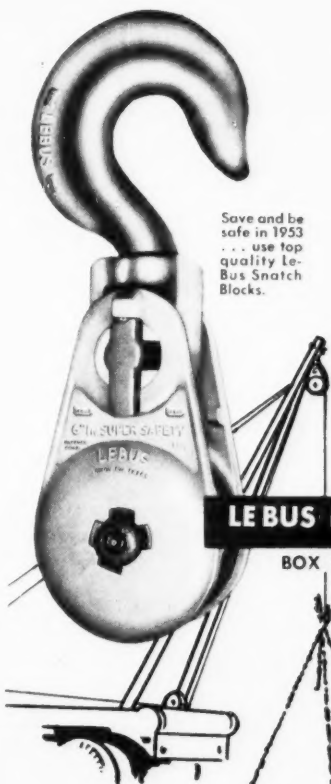


P E PRECISION ENGINEERED LeBus snatch blocks



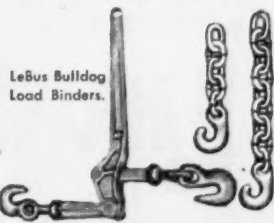
Here is a new block that is superior in every way. That is, if you are looking for a snatch block that is strong, tough, and dependable. One that you can rely on being constantly on the job regardless of how tough the job or how bad the weather. LeBus block requires no tools other than your hands, can be taken completely apart for oiling or other inspection and re-assembled in a matter of a few seconds, no nuts or threads to foul, burr or lose, is completely guaranteed against any failure which might be made in line with the manufacturers specifications. All parts are completely drop-forged, (no castings) heat-treated, quenched and drawn to make this snatch block fully reliable and dependable under any and all conditions of operations. The LeBus block is priced competitively and can be secured through any wholesale jobber throughout the United States. For further information write direct or have your supply source write for catalog page 1000 for complete information on the five sizes of LeBus blocks.

Save and be safe in 1953... use top quality LeBus Snatch Blocks.



LEBUS ROTARY TOOL WORKS, Inc.

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LeBus Bulldog Load Binders.

LeBus Tail Chains.

IMPROVED TURNBUCKLES

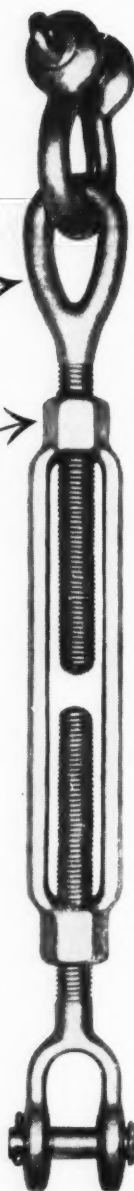
have

**NEW
EYE DESIGN**

HEX ENDS

Laughlin's exclusive pear shaped turnbuckle eyes were designed to eliminate need for special shapes. It's the only eye that will take the ear of a shackle one size smaller than the turnbuckle. The shape makes it stronger than a round eye. It looks better and works better. The next time you need turnbuckles order Laughlin and see for yourself.

All Laughlin turnbuckles have hexagon ends and rugged reins. Easily adjusted with a wrench. Wheel-abraded finish dipped in a rust preventive or hot dip galvanized.



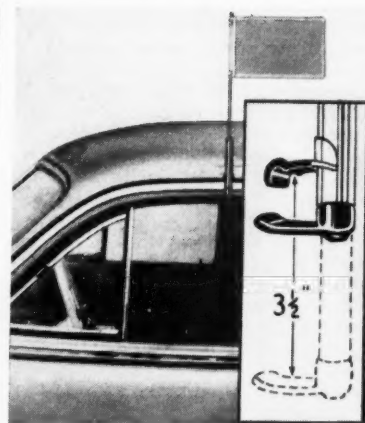
FOR SAFETY'S SAKE SAY

LAUGHLIN

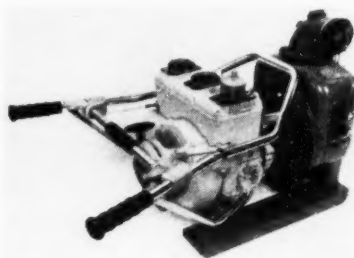
*The Full Line of
Wire Rope & Chain Fittings*



THE THOMAS LAUGHLIN CO., 1014 Fore St., Portland, Me.



NEW SAFETY FLAG—A safety flag made of bright red, tough gabardine that clamps on top of door of any car or truck cab and has a sturdy enclosed spring which holds the flag staff rigid with window open or shut is now available. Units are \$27 per dozen.—**The Wright Flag Co., Nappanee, Ind.**



FIRE PUMP ATTACHMENT — A new fire-pump attachment that fits the power unit of all two-man McCulloch chain saws has recently been introduced. The attachment that can be installed in the field in approximately one minute provides a portable fire pump with a capacity up to 250 gpm.—**McCulloch Motors Corp., Los Angeles, Calif.**



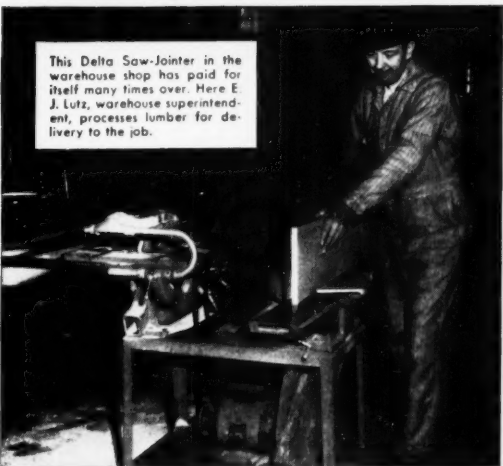
CONCRETE FORM TIE—The strip-easy snap tie is designed to give the contractor greater strength, positive spreading and faster form erection for ordinary finished and watertight walls. Its features are hot forged ends, assuring greater strength and increased safety; a specially designed washer provides additional bearing on the form and keeps grout seepage to a minimum; wood cones that

(Continued on page 186)

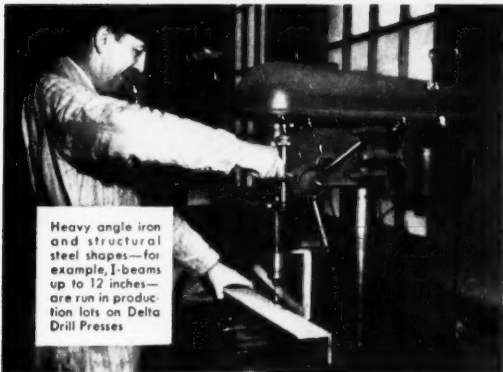
Building bleacher seats in gymnasium of school at Marienville, Pa., the Delta 10-inch Unisaw does all the cutting—with labor saving of as high as 50%



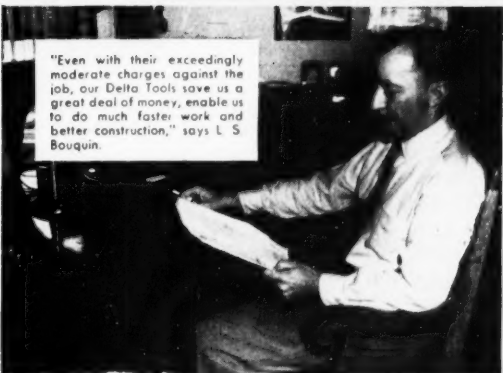
This Delta Saw-Jointer in the warehouse shop has paid for itself many times over. Here E. J. Lutz, warehouse superintendent, processes lumber for delivery to the job.



Heavy angle iron and structural steel shapes—for example, I-beams up to 12 inches—are run in production lots on Delta Drill Presses



"Even with their exceedingly moderate charges against the job, our Delta Tools save us a great deal of money, enable us to do much faster work and better construction," says L. S. Bouquin.



Does 50% Labor Saving Sound Good To You?

"WE GET IT WITH **DELTA** TOOLS"

says L. S. Bouquin, Oil City, Pa.,

Contractor executive

"... For example, our Delta 10-inch Unisaw—used on-the-job for many operations—is charged against the job at \$1.75 per hour, a break-even basis. Considering the enormously increased speed and multiplied output against labor rates, you can figure fat savings—at least 50 per cent. And we get not only a faster job but a better one.

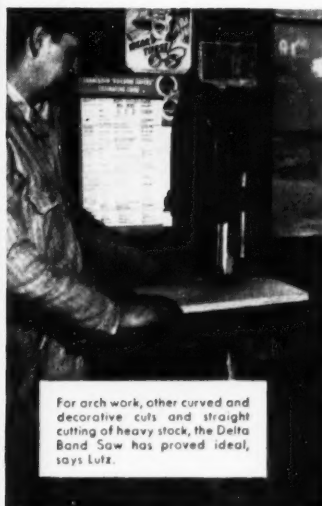
"From rough sawing, such as plaster grounds, building forms, work-tables, utility sheds and the like—to mill work and precision cutting, our Delta table saws regularly pay us big dividends."

Other Delta tools used every day by Bouquin include a saw-jointer, drill press and band saw. The saw-jointer gets liberal use on mill work and cabinets; and the band saw saves countless hours on ornamental projects, arch cuts and brackets. The Delta drill press makes bolt holes, and drills metals in maintenance and production work. These tools are charged against the jobs at comparable rates. "They are indispensable," says E. J. Lutz, in charge of maintenance—"have paid for themselves many times over."

Charging the cost of power tools against the job is today an accepted practice by alert contractors because of the man-hours saved and the improved quality of construction. Get the full story of the ruggedness, accuracy and mobility of Delta Power Tools from your Delta dealer, listed in the Classified Phone Book under "Tools" or "Machinery." And use the coupon to get the latest Delta catalog.



DELTA QUALITY MAKES THE DIFFERENCE



For arch work, other curved and decorative cuts and straight cutting of heavy stock, the Delta Band Saw has proved ideal, says Lutz.

DELTA QUALITY POWER TOOLS

Another Product of **Rockwell**



Delta Power Tool Division

Rockwell Manufacturing Company

658K N. Lexington Ave., Pitts. 8, Pa.

Please send the latest Delta Catalog

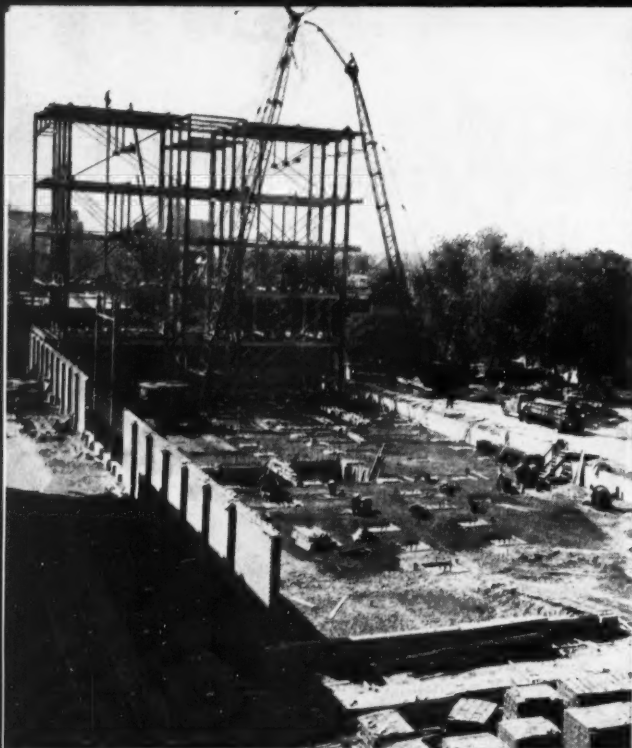
Name _____

Company _____

Address _____

City _____

Zone _____ State _____



75,000 gals of gasoline, 9,000 lbs of grease, 1,800 gals of oil, \$1,500 worth of tires, and \$450 worth of batteries helped Fruin-Colnon's 21 trucks, 22 cranes and shovels and miscellaneous other machinery, keep moving last year.

Two pile drivers driving steel beam piling for Jefferson Memorial Expressway Viaduct. Due to continuous wear and tear on Fruin-Colnon's equipment, their maintenance and repair crews are busy year-round keeping equipment working. Reports from the shop have a strong influence on new equipment purchases.



BUILDING CONTRACTOR SPENDS \$8,500,000 FOR CONSTRUCTION MATERIALS IN ONE YEAR

Fruin-Colnon Contracting Co. of St. Louis, Mo., specialists in construction of industrial and commercial buildings, last year used \$8.5-million in construction materials and supplies (all within a 100-mile radius of their base) on jobs such as: new manufacturing plant in St. Louis; warehouse addition in Crystal City, Mo.; research laboratory in East St. Louis; power plants in Alton, Ill. and Venice, Ill. In addition, they built bridges in Livingston, Ill. and St. Louis; engaged in pile driving and caisson work.

This work was handled almost entirely by their own work force — ranging from 1,500 to 2,000 men.

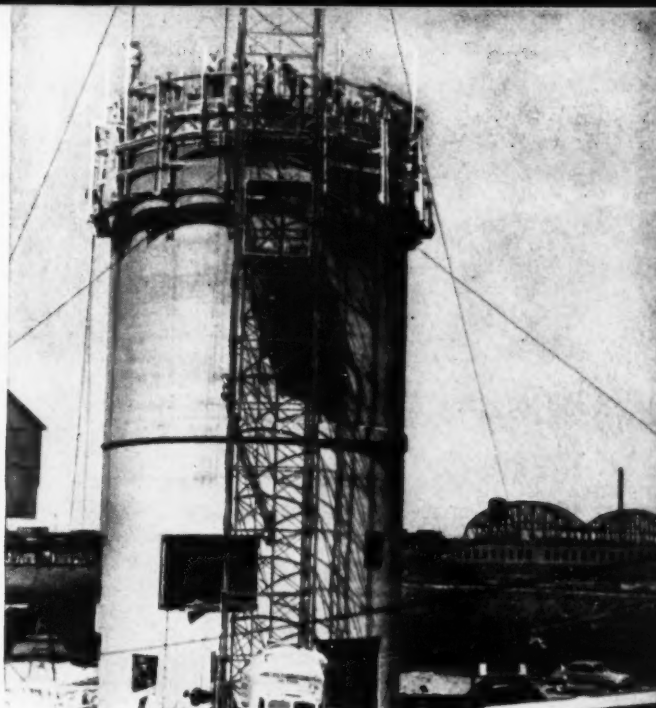
In completing \$20-million worth of construction last year Fruin-Colnon had to (1) select the right combination of their 200-man supervisory staff for each job; (2) assemble the right combination of their \$1,500,000 worth of equipment; (3) select \$8.7-million worth of the "right" construction materials and equipment.

The necessity of having the right men at each job requires plenty of staff moves. Can your salesmen, or your distributors, keep up with Fruin-Colnon's major buying influences as they move from job to job? Probably not. But **CONSTRUCTION METHODS AND EQUIPMENT** keeps up with Fruin-Colnon men in 11 locations — delivering your sales messages. Each month 16 copies of **METHODS** reach Fruin-Colnon engineers, supervisors, foremen — men in charge of excavating, concrete work, steel work, carpentry, and every other job that eats up material and wears out equipment.

When one contractor spends \$8,700,000 in one year it's big business. Multiplied by thousands — it's really business worth going after. Last year 7,420 contractors each received contract awards totaling over \$100,000 (a 10% increase over 1951). These contractors are buying more construction materials and equipment than ever before. Get a greater share of this growing



\$1,500,000 in construction equipment is used by Fruin-Colnon on building projects like this huge power plant. \$190,000 worth of this equipment was new last year. \$165,000 in parts and accessories is needed annually. Included last year: 25,000 ft of wire rope, 40,000 lb of welding rod. Make sure these men buy your spare parts for their machines. Each month *METHODS* gives maintenance tips to its readers—the ideal advertising tie-in for you.



1,000,000 bd ft of lumber, 20,000 bbl of cement, and 9,000 tons of steel were used by Fruin-Colnon last year. Above, hoisting material for installation on batch mixing silo. Contractors usually name their brands when buying materials and supplies. A good way to make sure important construction men know your product is by consistent advertising to *METHODS'* 33,000 paying subscribers.



\$8,500,000 spent for materials in 1952. Steel, plaster, glass, cement, and many other building materials are purchased for jobs like this. Many times, due to field conditions, material specifications

are changed with owner's permission. This business can be yours if contractors know your product. A consistent ad schedule in *METHODS* will make your product known to more than 33,000 big buyers.

market by putting your advertising in a growing magazine. *METHODS'* contractor circulation is up 11% over last year; advertising for the first six months up 135 pages over same period last year. Reach more than 33,000 important contractors, and men in government and industry most interested in the contractor function by advertising consistently in.....

CONSTRUCTION METHODS AND EQUIPMENT



A MCGRAW-HILL PUBLICATION
330 WEST 42nd STREET, NEW YORK 36, N.Y.



Bayley

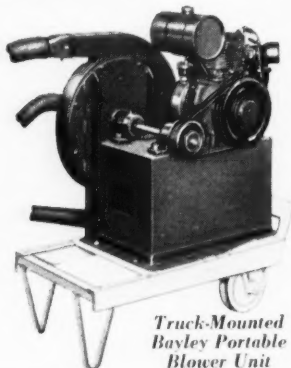
PORTABLE

BLOWERS & EXHAUSTERS

For Those "Hard-To-Get-At"
Construction Applications

- ★ Underground Ventilation
in Tunnels, Shafts, Wells,
Etc.
- ★ Materials Handling
- ★ Interior Tank Painting
- ★ Welding Inside Enclosures

There is a proper size and capacity in a BAYLEY Portable Blower or Exhauster available for your special requirements. Tell us your problems—BAYLEY can supply the equipment needed to do the job!



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BLOWER COMPANY

Engineered Air-Handling Equipment

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MODEL M11-24
Contractors Barrow

Now you can save money. Use a Jackson Self-Lubricating heavy duty barrow. They cost less, wear longer and absorb the shock load better.

Model M11-24B (Roller Bearing) still available.

Jackson

MANUFACTURING COMPANY
HARRISBURG, PENNA.

Oldest and largest wheelbarrow maker in America

(Continued from page 182)

insure positive breakbacks and permit tie removal before stripping forms and wide flattened sections that prevent turning in concrete.—**Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago, Ill.**

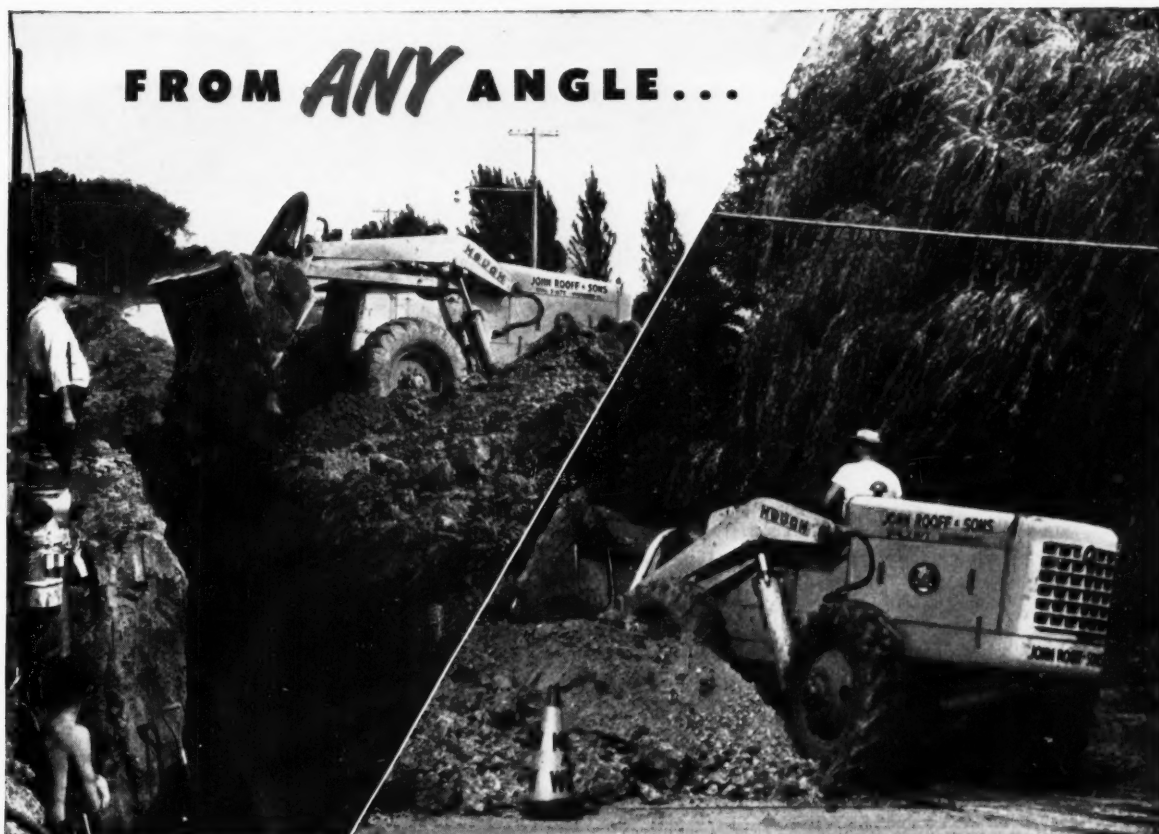


NEW WASHER—Quick, automatic cleaning of small parts, complete assemblies and tools is made possible by a new air-powered washer now being produced. The cleaning is achieved by the action of an oscillating turntable which is submerged in a cleaning solution. Parts to be cleaned are placed in a specially designed perforated basket which rides on the turntable, while complete assemblies are placed directly on the turntable. Speed of the washer may be varied from 0 to 240 oscillations per min.—**Kelite Products, Inc., Los Angeles, Calif.**



HOOK WITH A SAFETY—A hook with a safety gate which locks automatically and will not open unless the pin is manually depressed is but one of the guaranteed features of the new Bullard-Burnham safety hook. With the addition of the safety gate, it is claimed it is literally impossible for the load to slip off. The design of the gate uses the hook shank as its operating base, yet does not obstruct the throat of the hook.—**E. D. Bullard Co., 275 Eighth St., San Francisco 3, Calif.**

FROM *ANY* ANGLE...



...PAYLOADER *PAYS*...

EVERYBODY concerned is pleased with the back-filling job John Roof & Sons' "PAYLOADER" tractor-shovel is doing on this 12" water main installation. The contractor likes the 500 feet of daily progress being made . . . the water department knows it is getting a good solid back-fill . . . the highway department is sure the "PAYLOADER" will not damage the pavement.

Dig! Load! Backfill! Stockpile! Lift! Carry! Strip! Push! Pull! The "PAYLOADER" does *all* these jobs. That is why it is one of the busiest machines on any project — and the most in demand. There are eight sizes of "PAYLOADERS," also a choice of four-wheel, rear-wheel or front-wheel drive to best fit your needs.

"PAYLOADER" Distributors — some 200-strong

in the U. S. and Canada — are ready to serve you with their modern parts department and service shops manned by experienced personnel. From *ANY* angle, it will pay to buy a "PAYLOADER" tractor-shovel — a *complete* unit built by the tractor-shovel pioneer, The Frank G. Hough Co., 706 Sunnyside Avenue, Libertyville, Illinois.

A SIZE FOR ANY JOB

Full information on any "PAYLOADER" model is yours on request:

Four-Wheel drive Models HM —
1 1/2 yd. and HR — 1 yd.;
Rear-wheel drive Models HY —
1 1/4 yd., HFH — 1 1/8 yd.,
HF — 3/4 yd., HE — 1/2 yd.;
Front-wheel drive Models HAH —
1/2 cu. yd., HA — 12 cu. ft.





PAYLOADER®

THE FRANK G. HOUGH CO. • Since 1920



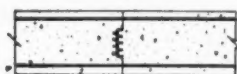
just nail 'em in...
pour your concrete



AND FORGET ABOUT SEEPAGE
WITH LABYRINTH
WATERSTOPS

• Concrete shrinkage can't cause leakage between pours when you're protected by ribbed and grooved polyvinyl plastic Labyrinth Waterstops in the joints. Economical? You bet . . . No special forms, no metal fins to bend or tear . . . no maintenance cost, AND . . .

INSTALLATION COST IS VIRTUALLY ZERO!



FOUR RIB LABYRINTH WATERSTOP IN VERTICAL CONSTRUCTION JOINT

FOUR RIB LABYRINTH SHOWN IN FLOOR SLAB

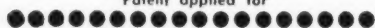


COMPLETED JOINT

WATER SEALS, inc.

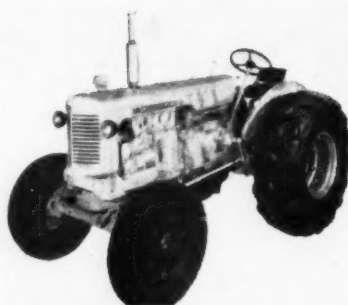
9 SOUTH CLINTON STREET
CHICAGO 6, ILLINOIS

For Further Information and Sample—Clip the Coupon!
Patent applied for

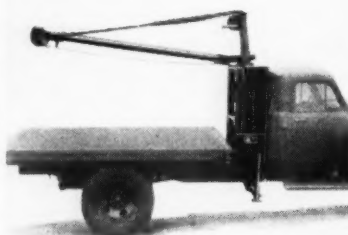


WATER SEALS, INC.,
9 South Clinton St., Chicago 6, Illinois
Send full information and sample.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

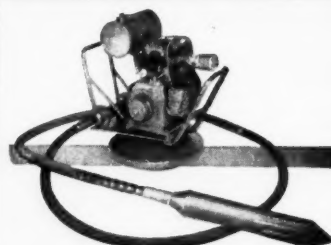


IMPROVED MM WHEELERS—Util Industrial Wheelers are now being produced with improved features and a wider selection of optional equipment. The hydraulic steering equipment has a control valve in the drag link to permit mechanical steering in the event of hydraulic failure and a relief valve in the pump to eliminate high back pressure when wheels are turned to the limit. Also available is a new 283-cu in. diesel engine which is completely interchangeable with the gasoline unit.—Minneapolis-Moline, Minneapolis, Minn.



SELF-LOADING CRANE — Available in a wide range of capacities, from ½- to 2-ton lifts, the Ray Lind loaders are adaptable for use on any trucks and convert the truck into a self-loading truck-crane. The crane unit mounts directly behind the cab and occupies only from 16 to 18 in. of space. Installation is simple with no need to cut or alter the truck body. The body is simply moved back on the frame. Power for hoisting is supplied by the truck engine through a power take-off. The winch uses standard automotive parts and provides smooth operation with little shock to engine or transmission.—Ray-Lind Mfg. Co., Iron River, Mich.

REMOTE CONTROL FOR GRAD-ALL—A remote control drive system for the Gradall, enabling the operator to control to a maximum degree the maneuverability of the machine on the job, is now offered as an optional accessory. The new system permits the operator, by turning a switch, to start or stop the carrier motor, drive the machine forward or backward, steer it right or left, increase or decrease the carrier engine (Continued on page 190)



Concrete

VIBRATORS

Gasoline Engine or
Electric Motor Driven

CONCRETE GRINDERS

OTHER PRODUCTS

FRONT END SHOVELS
for Industrial Tractors

HEATING KETTLES
for Asphalt and Tar

AGGREGATE DRYERS
for Stone and Sand

ASPHALT PLANTS
Portable — Stationary

Write for Circulars

White Mfg. Co.

ELKHART 6

INDIANA

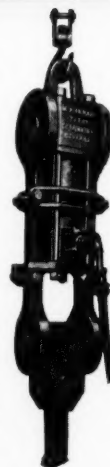
McKIERNAN- TERRY

Ruggedly-Built

PILE EXTRACTORS

Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubbornly set piling. These double-acting extractors come in two standard models — heavy and extra heavy. Standardized line also contains 11 double-acting hammers and 5 single-acting hammers. Write for bulletin.

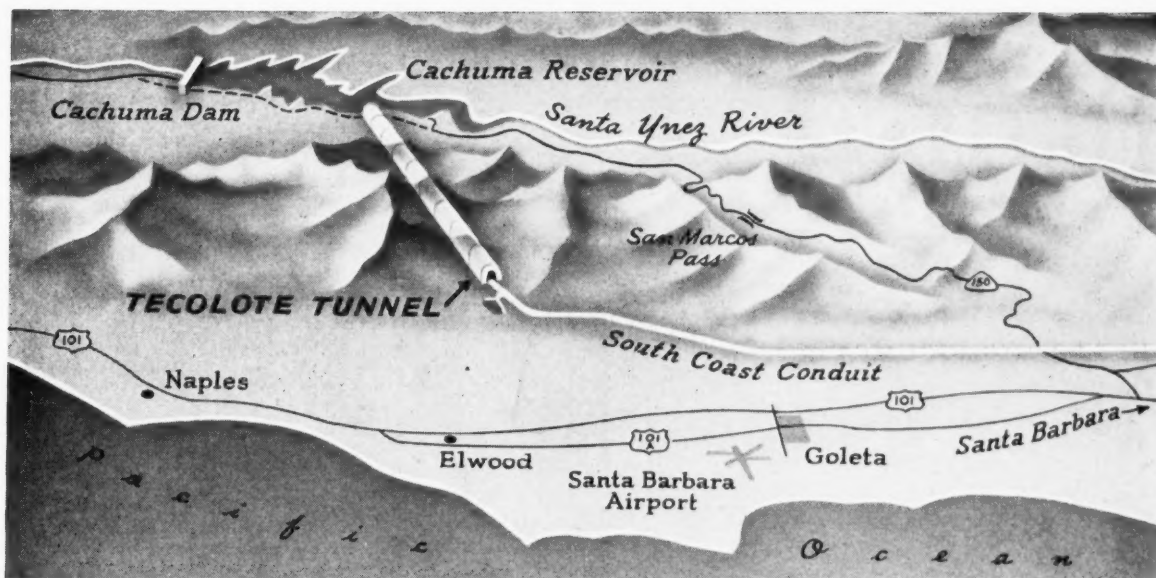
Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.



McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS

14 PARK ROW, NEW YORK 38, N. Y.

MR 346



Map shows the Cachuma Reservoir which will be formed by damming the Santa Ynez River. Crest of the mountain range is shown in center. South Coast Conduit will take water from Pacific end of tunnel to distribution centers.

6½-mile tunnel to bring water to thirsty Santa Barbara area

Because of a mountain barrier the Santa Ynez River in Southern California flows away from population centers, emptying each year its millions of gallons of water virtually unused into the Pacific. Meanwhile, the nearby Santa Barbara area, on the southern side of the Santa Ynez range, is suffering a water shortage.

To divert Santa Ynez water to where it is so urgently needed, the 6½-mile Tecolote Tunnel is being bored through the mountain, to tap water from a reservoir formed by the recently completed Cachuma Dam.

Begun in 1950, work on the tunnel has been pushed ahead through extremely tough strata despite frequent delays caused by subterranean water at the tunnel face.

Halverson Contractors, a combination of H. Halverson of Spokane and Carl M. Halverson of Portland, hold a \$7 million contract with the U. S. Bureau of Reclamation

for this project. Using both carbide-insert bits and single-use bits on rods of Bethlehem hollow drill steel, the contractors have advanced through a sedimentary formation, including some unusually tough shales and sandstones.

As in so many projects where drilling speed is a dominant factor, Bethlehem hollow drill steel has played a part in helping to keep Tecolote Tunnel drilling on schedule.

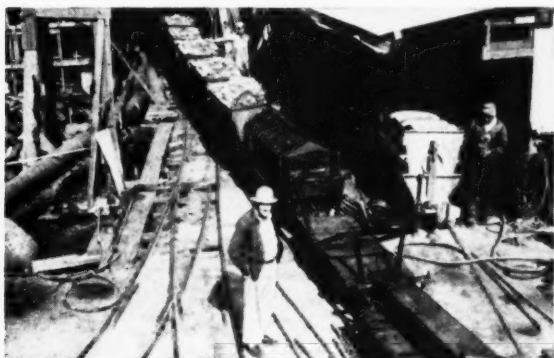
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation.

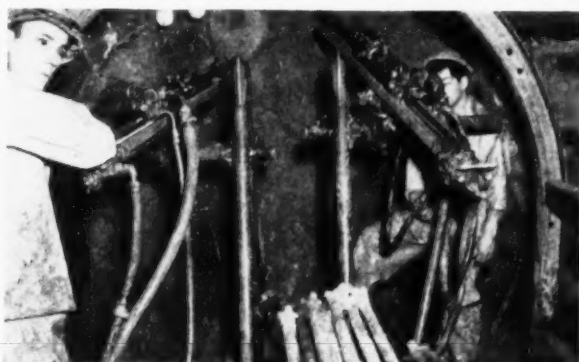


Two Grades of BETHLEHEM HOLLOW DRILL STEEL

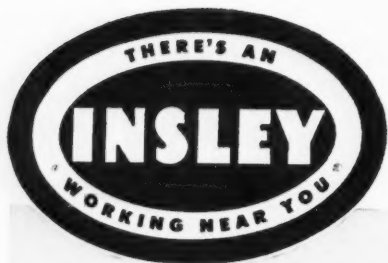
- THE "OLD RELIABLE" CARBON TYPE
- ULTRA-ALLOY, OUR CHROME-MOLY GRADE



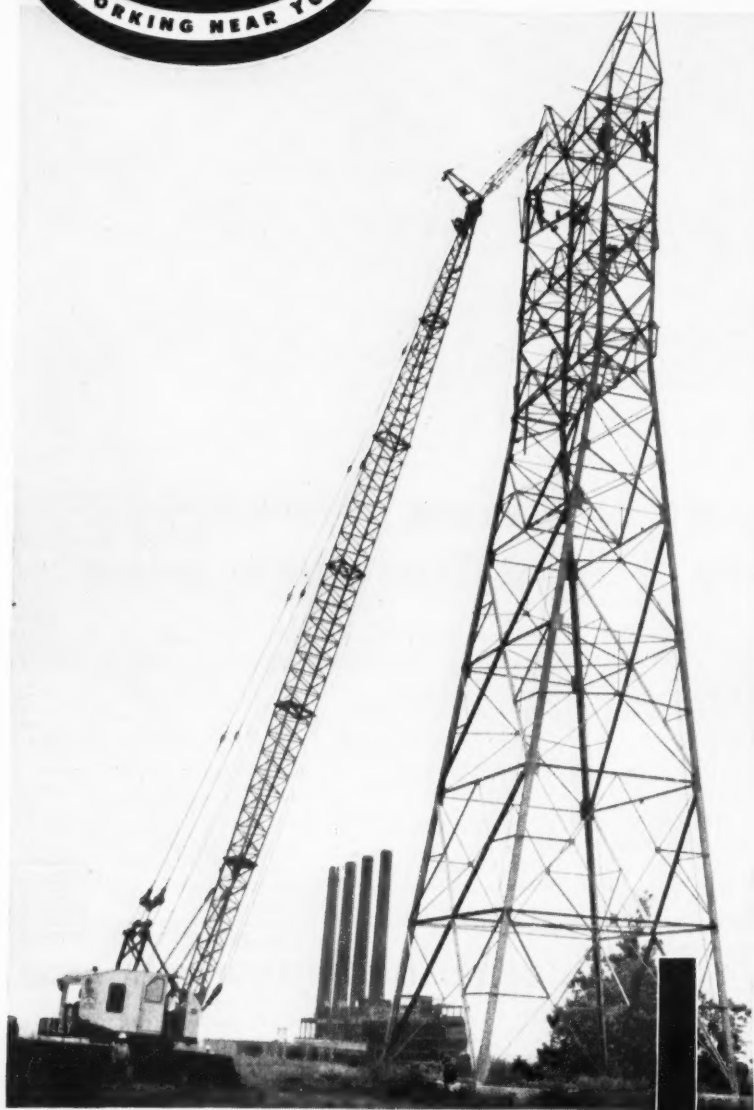
Tunnel Superintendent Oscar Peterson stands in foreground at the Pacific portal of Tecolote Tunnel as a trainload of muck emerges. The crews have advanced through a sedimentary formation unusually tough to penetrate and have blasted more than 80,000 cu yd.



The 7-ft-diam horseshoe bore is drilled with 6-ft rounds, every third round preceded by 30-in. test holes. Shown at tunnel face is a standard drill jumbo which mounts 3½-in. drifters. Halverson Contractors uses both carbide-insert and single-use bits on rods of Bethlehem Hollow.



ON A CONSTRUCTION PROJECT



Shown here is a Type WB Crane mounted on an 8 x 4 carrier, erecting a transmission tower.

The Insley Manufacturing Corporation has been manufacturing construction equipment since 1907. The Insley Line includes excavators and cranes, 5 to 30 ton capacity—crawler or rubber mounted. There's an Insley working near you on a construction project.

INSLEY MANUFACTURING CORP. • INDIANAPOLIS

wholly owned subsidiaries

THE MAXI CORPORATION, LOS ANGELES • SIX WHEELS, INC., LOS ANGELES

(Continued from page 188)
speed and even blow the horn without leaving the control cab. All this is accomplished by a pneumatic electric control system operated by a panel mounted within the cab. — Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio

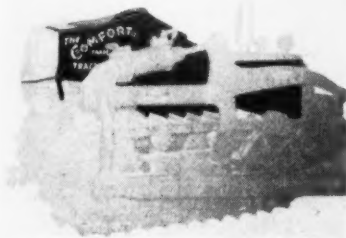


POWDER-ACTUATED FASTENER

—The new Ramset Plus-Power Jobmaster, with a $\frac{3}{8}$ -in. barrel assembly shown at bottom, next to the standard $\frac{1}{4}$ -in. barrel diameter, doubles the application for this powerful powder-actuated fastener, according to the manufacturer. The firm also claims this tool will do medium fastening into steel and concrete at one-third less operating cost than many heavy-duty tools. With slight modification for some standard Jobmasters now in the field, the two barrels can be interchanged. The new tool weighs less than 7 lb. — Ramset Fasteners Div. of Olin Industries, Inc., Cleveland, Ohio

PLASTIC WINDOW FRAMES—A

new molded plastic window frame unit guaranteed never to shrink, swell, rot or rust and needing no painting or refinishing, has been introduced. Price is said to be competitive with wooden windows. The unit, called Plyco, features jointless construction, providing rounded, easy-to-clean corners. Aluminum weather stripping assures a year round snug fit, and a glazing strip eliminates putty. —The Kohl Co., Elkhart Lake, Wis.



FOR OPERATOR COMFORT —The line of Comfort heaters for crawler tractors has been recently expanded to include A-C and International Harvester tractors. The new model heaters are custom fit to the tractors

(Continued on page 192)

Protection by

TOUSEY!



TOUSEY finishes protect this large commercial snow loader from rust and abrasion the year 'round. Winter months call for a heavy work schedule, moving tons of snow in sub-zero weather—sharp contacts with curbs, street bricks and ice. Summer months are equally difficult with the long storage period when humidity and heat combine to break down the protective coating. Years of experience coupled with extensive research have taught TOUSEY how to solve many such finishing problems. Send in your specifications—technical information will be given without obligation.



DURACOTE for DURABILITY

TOUSEY VARNISH COMPANY

520 WEST 25TH STREET • CHICAGO 16, ILLINOIS

4-Cycle Air-Cooled

KOHLER ENGINES



Power for garden tractors, mowers, pumps, sprayers, snow removal equipment, elevators and hoists, mobile saws, concrete mixers, compressors, feed grinders, industrial and lift trucks, and a wide range of tools and equipment for industry, construction, farm and home.

Engineered and built to the quality standards that have won acceptance for Kohler Electric Plants the world over.

Write for information.

Kohler Co., Kohler, Wisconsin
Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

meet the . . .

HEAVYWEIGHTS

★ JAMES J. CORBETT—heavyweight champion of the world—1892 to 1897

weight178 lbs.
height6'1"



WAYNE CRANE

... heavyweight champion of the 1/2-yard, 10-ton class—1946-TODAY!

32,655 lbs. as a Model 20 shovel proves it—a champion money-maker, too! Ask any owner to tell you his experiences with Wayne Crane . . . place an order for your next crane-excavator on the basis of what he tells you.

The heavy-duty Wayne Crane is designed for tough digging—its mobility and fast, easy operation make it a natural for stockpiling, too!

Your dealer will give you a list of Wayne Crane owners doing your kind of work—call them at our expense.

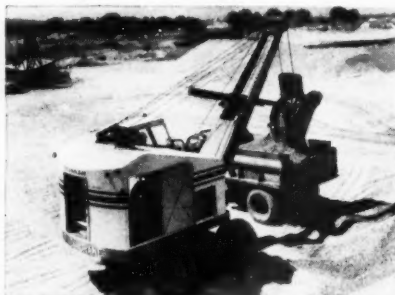
Plan Now to check with a Wayne Crane owner before you buy!

Also available—Model 66, 8-ton crawler-mounted; Model 40, 12 1/2-ton truck-mounted.

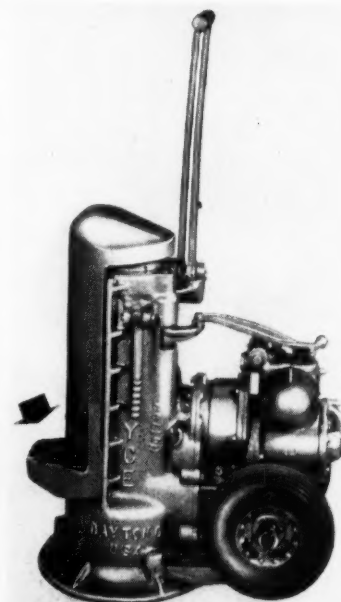
Mfd. by WAYNE CRANE DIVISION, AMERICAN STEEL DREDGE COMPANY INC.
FORT WAYNE 1, INDIANA

SEE YOUR WAYNE CRANE DEALER TODAY!

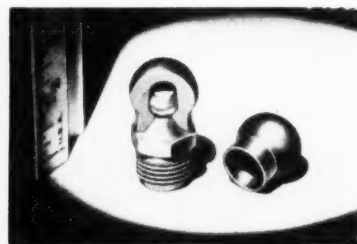
Complete service and parts facilities are maintained by Wayne Crane Distributors in all principal cities



(Continued from page 190)
and designed to accommodate dozers and other equipment. The manufacturer claims that it is not necessary to cut holes in the heater to reach starting motor, oil sticks or other parts regularly used. — Comfort Equipment Co., 2609 Walnut St., Kansas City, Mo.



75- TO 100-TON LIFTER—This little jack is able to pick up a 75-ton load as low as 9 in. from the floor and boost it up as much as 13 3/4 in. The toe-lift can be removed quickly, and the jack will lift 100 tons on top of its ram. The jack is of the ball-bearing geared screw type and is powered by a 5-hp, multi-vane Ingersoll-Rand rotary air motor. It features an automatic shut-off at both upper and lower limits of the ram—easy portability with long trundling handle and large roller-bearing, semi-pneumatic-tired wheels and a massive base for good stability. —Joyce-Cridland Co., Dayton, Ohio



GREASE FITTING COVER—Known as the Zur-Kap, and made of oil-resistant neoprene, a new grease fitting cover is now being distributed. It is claimed it is easy to snap on and off. —Winner Mfg. Co., Box 945, Fort Wayne 1, Ind.

Plenty of heart for tough jobs!



New diesel-powered Model RDF-190 Series. GVW ratings, 30,000 to 38,000 lbs. Famous Comfo Vision cab.

The heart of the 6-wheel truck is the bogie. INTERNATIONAL's bogie has been performance-proved on the tough jobs. Proved beyond a doubt by INTERNATIONAL's 18 straight years of 6-wheel sales leadership.

INTERNATIONAL brings you this advanced bogie design in America's most complete line of 6-wheelers—the widest choice, by far, of models, engines, transmissions, and axle ratios. No other 6-wheelers provide such exact truck-to-job specialization!

Ask your INTERNATIONAL Dealer or Branch for all the facts—and a demonstration. Time payments arranged.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

23 NEW 6-WHEEL MODELS

GVW ratings, 22,000 to 90,000 lbs. Engines from 130 to 356 horsepower. Choice of gasoline or LPG fuel systems. Diesel engines available for models with GVW ratings of 30,000 lbs. and over. Transmissions and axle ratios to meet any requirement. America's most complete truck line—170 basic models from ½-ton pickups to 90,000 lbs. GVW off-highway models.

OUTSTANDING ADVANTAGES OF THE INTERNATIONAL BOGIE

The third differential and power divider allow each wheel to rotate independently. There is practically no tire scuffing, "axle fight," or power loss. Perfect matching of tires is unnecessary. Fuel consumption is lower. Under adverse conditions, the third differential can be locked out, giving positive traction on all wheels.

Abnormal tire wear eliminated because INTERNATIONAL bogie design *always* keeps wheels parallel to frame.

Reduces road shock by 50%. "Walking action" design keeps chassis frame and body level while bogie "walks" over obstructions and levels out the road.

Extra strength without extra weight. More payload per pound of chassis weight results from elimination of unnecessary dead weight. Strength is concentrated where needed.

Load stresses equalized. Load is carried from the frame to the axles at four points.



International Harvester Builds McCORMICK® Farm Equipment and FARMALL® Tractors... Motor Trucks... Industrial Power... Refrigerators and Freezers

Better roads mean a better America

INTERNATIONAL® TRUCKS

"Standard of the Highway"

Saving \$1600 a year ***on clutches alone***



Model MDT Plymouth locomotive pulling a 320-ton steam locomotive to the scrap heap. This 35-ton locomotive is equipped with an Allison TORQMATIC Converter which smoothly transmits power from a 220 h.p. Diesel engine.

In September 1951, Pittsburgh Ferrous Products Company bought a TORQMATIC-equipped Plymouth locomotive to replace one with a mechanical drive. With his old locomotive, this scrap dealer had to replace clutches four times a year—at \$400 each. But with an Allison TORQMATIC Converter transmitting power in the new unit—a *saving is effected of \$1600 a year on clutches alone*, plus additional savings in labor and availability.

Since it was delivered, this locomotive has worked more than 4000

hours with absolutely no down time. The small 35-ton unit has pulled loads as high as 1400 tons. With the TORQMATIC Converter smoothly transmitting power, sudden jerks and jolts are eliminated, cutting wear on car couplers, scrap cars and the locomotive itself.

The Fate-Root-Heath Company, makers of Plymouth locomotives, is one of many manufacturers who install Allison TORQMATIC DRIVES in their products to help their customers get more work at less cost. For more information on how you

ALLISON TORQMATIC CONVERTER

SIMPLE DESIGN—one-piece cast converter elements—minimum maintenance

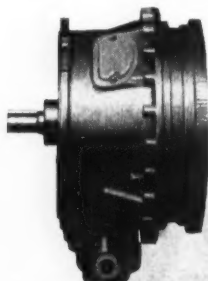
COMPACTNESS simplifies installation

DESIGNED for power applications in the 75 to 400 h.p. range

LONGER EQUIPMENT LIFE—absorbs shock, eliminates engine lugging, cuts maintenance costs

can cut your heavy-duty equipment operating costs, ask your equipment dealer, manufacturer or write:

ALLISON DIVISION OF GENERAL MOTORS
Box 894TT, Indianapolis 6, Indiana



Allison **TORQMATIC DRIVES**



COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES * TRUCKS * TRACTORS * SCRAPERS * SHOVELS * DRILLING RIGS * LOCOMOTIVES

EQUIPMENT NEWS ...

Continued from page 192



KEY-IN-THE-KNOB LOCKS — A new line of locks for architects, contractors and builders, called the 5200 Fairfield Series, has been announced by Yale & Towne. The new locks are of the push-button, key-in-the-knob variety and are available in brass and aluminum with chromium finish for bathroom and kitchen doors.—**The Yale & Towne Mfg. Co., Stamford, Conn.**



HYDRAULIC WEDGE—The Hydra-Wedge is a completely integral unit consisting of a manually operated hydraulic pump, a power cylinder and a tapered wedge attached to the end of a piston rod for felling trees. The unit weighs only 20 lb, is 24 in. long, and is designed to replace the usual sledge hammer, steel and wood wedges heretofore required. The wedge itself is sheathed on each side by two thin blades hinged to the main cylinder casting. In use, these blades are inserted in the saw kerf of the truck. Pumping the handle then forces the wedge between the blades and effects lifting forces up to 90,000 lb.—**Hufford Machine Works, Inc., 1700 E. Grand Ave., El Segundo, Calif.**

Here's a cleaning tip from Boston ...



Trailer-Mounted MALSBARY 250 CLEANER BLASTS CORROSIVE DIRT...AND RUNS

Does your cleaner take 2 to 4 hours to steam clean a truck? Is it frequently down for repairs? Then switch to a Malsbary heavy-duty cleaner as did the City of Boston. Malsbary Model 250 (delivering hot solution at 325°F. and 200 lbs. pressure) completely removes dirt and corrosive, encrusted salt from truck shown here in 1 hour. It cleans big street sweepers in 2 hours (a 4 to 5 hour job for conventional steam vapor cleaners)—then rolls to other yards for more cleaning work. Says Boston's maintenance superintendent, "The most dependable cleaner we've ever used. Maintenance costs have been nil."

Ask for On-Job Demonstration

See for yourself how Malsbary exclusive patented pumping system delivers 2 to 4 times more pressure than steam vapor cleaners; thus enables you to do jobs with Malsbary that other cleaners can't touch. For demonstration, fill in coupon NOW. No obligation.

3 heavy-duty models — 250, 300, 500. Oil or gas fired; gas engine or electric drive; stationary, portable or trailer mount. All develop hot solution in 2 to 3 minutes.



Room C10, 845 92nd Ave., Oakland 3, Calif.

28

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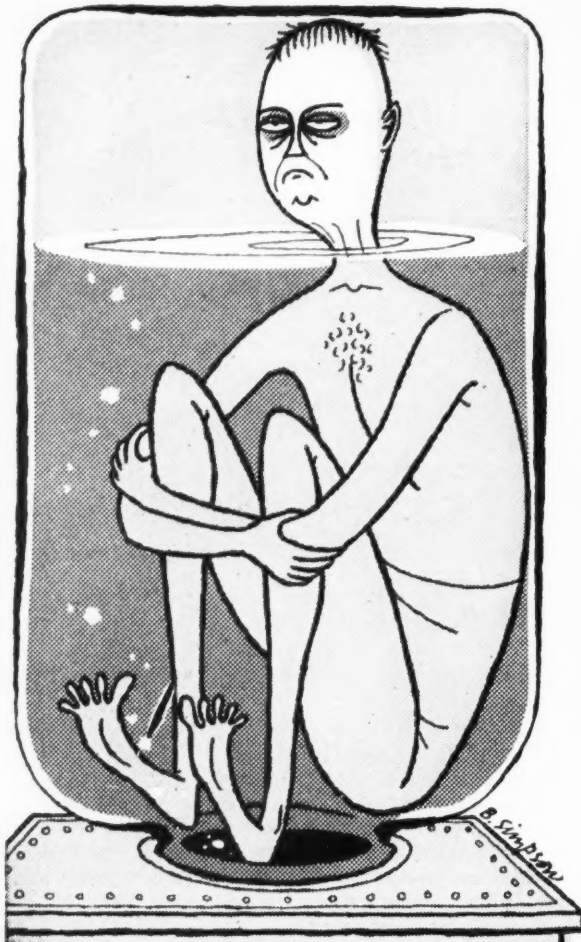
- ☐ On-the-job demonstration.
- ☐ Free booklets on MALSBARY Cleaners.
- ☐ "How To Make Efficient Use of Steam Cleaning" reprint.

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BUSINESS EXECUTIVES CHECK THESE QUESTIONS

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

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| <input type="radio"/> HAVE YOU GIVEN YOUR EMPLOYEES TIME OFF TO MAKE BLOOD DONATIONS? | <input type="radio"/> HAS YOUR MANAGEMENT ENDORSED THE LOCAL BLOOD DONOR PROGRAM? |
| <input type="radio"/> HAS YOUR COMPANY GIVEN ANY RECOGNITION TO DONORS? | <input type="radio"/> HAVE YOU INFORMED EMPLOYEES OF YOUR COMPANY'S PLAN OF CO-OPERATION? |
| <input type="radio"/> DO YOU HAVE A BLOOD DONOR HONOR ROLL IN YOUR COMPANY? | <input type="radio"/> WAS THIS INFORMATION GIVEN THROUGH PLANT BULLETIN OR HOUSE MAGAZINE? |
| <input type="radio"/> HAVE YOU ARRANGED TO HAVE A BLOODMOBILE MAKE REGULAR VISITS? | <input type="radio"/> HAVE YOU CONDUCTED A DONOR PLEDGE CAMPAIGN IN YOUR COMPANY? |
| <input type="radio"/> HAVE YOU SET UP A LIST OF VOLUNTEERS SO THAT EFFICIENT PLANS CAN BE MADE FOR SCHEDULING DONORS? | |

Remember, as long as a single pint of blood may mean the difference between life and death for any American... the need for blood is urgent!



NATIONAL BLOOD PROGRAM



this
man
has
ice water
in his veins!

Of course he'd never volunteer to give blood, anyway. But any resemblance of this old duffer to the average, red-blooded American is a mistake.

For instance, several million healthy Americans have given blood. *But it's not enough.*

So this is to tell several million more Americans that their blood is needed—now!

We've never let anyone down who was in trouble. When a GI gets wounded and suffers *shock*—he's in bad trouble. He's got to have blood and lots of it! Folks here at home need blood too—to save their lives.

So make a date with your Red Cross, Armed Forces or Community Blood Donor Center. One hour and you're on your way.



**GIVE
BLOOD**
...give it again and again

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

ALL ABOUT PORTABLE HEATERS

If you really want to find out complete information about portable heating devices as they are used for temporary heating on construction jobs and in plants, get yourself a copy of the new Herman Nelson publication called, "Guide to the Selection and Use of Portable Space Heaters." The book points out that heat output and portability are not the only major factors to consider when buying air heaters, but the most important feature to check is safety. The booklet is easy to read and gives one of the most complete treatments of space heaters we've ever seen. Copies are free. —American Air Filter Co., Inc., 1824 Third Ave., Moline, Ill.

DIAMOND DRILLS—A 4-p bulletin No. 86, lists Longyear Diamond Core Drills in the Junior Straitline, U. G. Straitline and Master Straitline models. Drilling supplies and the Arvela Model 52 Precision Magnetometer also are described. Copies can be obtained from E. J. Longyear Co., Foshay Tower, Minneapolis, Minn.

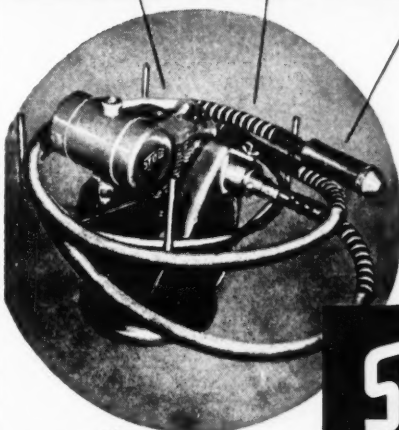
NEW WELDING DEVELOPMENTS

—New welding developments, 18 in all, are described in an 8-p simulated new products magazine. The folder contains short, factual descriptions of the welding alloy and organic bonding developments which have emanated since the first of the year. When writing for copies of this booklet, which is free, ask for TIS 1621.—Eutectic Welding Alloys Corp., 40-40 172nd St., Flushing 58, N. Y.

CARE OF PACKINGS—Proper installation and care of packings is covered in a 112-p booklet just published by U. S. Rubber Co. The catalog also contains metric engineering tables and conversion charts for both centigrade and Fahrenheit temperatures. It's a handy book for engineers, maintenance, and production people. Get copies from U. S. Rubber Co., Rockefeller Center, New York 20, N. Y.

IDLERS—More than 500 belt conveyor idlers in 34 types, designed to meet practically every requirement, are pictured and described in a new 48-p catalog just released by Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

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proven dependability!
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Write today or see your local distributor for a copy of STOW BULLETIN 526 and complete details on STOW concrete vibrators and screeds.



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Matawan, N. J.

Contractor: J. Rich Steers, Inc.



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THE ABOVE trestle, spanning Matawan Creek and adjoining marshes, was being replaced by an earth embankment (creek carried through by culvert). While placing the fill, the following problem arose:

- The underlying marsh soil—predominantly silt—was highly unstable, and progress in raising the fill went at snail's pace. Any attempt to hasten the surcharge meant threat of shear failures, thus imperilling trestle.
- Certainly no simple problem, yet it was quickly and dependably solved with a Griffin Wellpoint system (See photo, center). Used together with vertical drains, the wellpoints, penetrating to a depth of about 50 ft, greatly accelerated consolidation of the soft soil.
- When you meet with an out-of-the-ordinary wet job, it will pay you to meet with Griffin engineers.



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Hammond, Ind. Houston, Tex. Jacksonville, Fla.

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Toronto Montreal Halifax

APPLICATION OF CRUSHERS—A

new booklet giving information on how to go about making the most efficient and satisfactory application of various types of crushers to specific jobs has just been published. The important factors that go to influence operation, such as power consumption, parts, wear, maintenance costs, uniformity of product and others are discussed in detail. Also a check list is given that helps determine the best type of crusher for various jobs. This booklet is a valuable addition to any engineer's or operating man's library. It's free with a request on a company letterhead.—**Pennsylvania Crusher Co., 1768 Liberty Trust Bldg., Philadelphia 7, Pa.**

RUBBER BEARINGS—A new catalog which describes the use and advantages of Goodrich cutless rubber bearings in industrial equipment such as pumps, agitators and similar equipment where bearings can be lubricated with water or by the liquid handled has just been released. It's published and available from **Lucian Q. Moffitt, Inc., 333 S. Main St., Akron, Ohio.**

POWER TOOLS—Complete illustrations, descriptions, specifications and prices on all Thor universal electric industrial and automotive tools, accessories and attachments are included in a new 40-p catalog just released. For your copy write **Thor Power Tool Co., 175 N. State St., Aurora, Ill.**

ARC WELDING—More than 20 different models of arc-welding machines are described in a new 44-p catalog just published by Air Reduction. Request a copy of this catalog by writing **Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.**

MATERIALS HANDLING—New methods in bulk and packaged materials handling are pictorially described in a new 12-p "Modern Materials Handling" brochure just released. Illustrating the brochure are action shots of crawler and industrial wheel tractors, motor graders, and power units, plus detail views of the rubber-tired earthmoving equipment recently added to their line.—**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**

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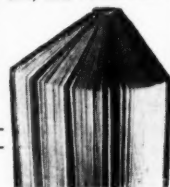
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LEGAL GUIDE for CONTRACTORS, ARCHITECTS and ENGINEERS

A handy legal guide to forewarn you of common pitfalls in your field... help for preventing costly lawsuits. Describes 83 situations reviewing typical problems arising out of construction contracts. Easily understood by the layman, it gives facts and contract provisions in each situation, and cites cases to sustain the principles of law set forth. By **I. Vernon Werbin, Member of N. Y. Bar and Lic. Prof. Eng. 374 pp., \$5.00**



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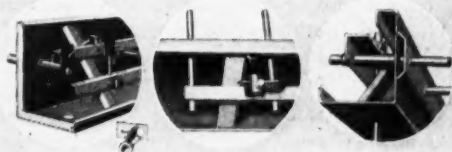


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If your business calls for multiple form sizes you'll want to know about the HELTZEL DUAL-DUTY FORM. Here are two individual form heights combined into a single form section. Simply turn it on its side and you have the second height. Latest form designs lend themselves to this arrangement naturally—providing lower initial purchasing costs and greatly reducing inventory problems.

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Before you buy be sure to look over the one complete line of standard and special sidewalk, road, curbing and airport forms designed and built by the HELTZEL STEEL FORM AND IRON CO., WARREN, OHIO. Send for additional literature. Representatives throughout the world.



Three integral form devices, exclusive with Heltzel, can be readily adapted to Dual Duty Form for jobs calling for doweling. Field tested, these methods assure accurate alignment, fast handling and easy stripping. Others engineered upon request.

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SURVEYING INSTRUMENT KNOW HOW—Available to engineers, universities, highway departments, etc., is a group of bulletins designed as instructional lessons on surveying instruments manufactured by David White Co. The first three issues are devoted to explaining the firm's U. S. Army Transit. Several issues will be devoted to one subject, and the complete series will include from 12 to 15 lessons. Address your correspondence to **David White Co., 315 West Court St., Milwaukee 12, Wis.**

NEW POWER CONTROL—Performance details on the new Baker Power Control Unit, PCU-75, which features multiple-disk clutch, brakes, adjustable hand levers and sheave mountings are all given in a 4-p folder just printed.—**Baker Mfg. Co., Springfield, Ill.**

HOISTING TOWERS—An interesting little folder that explains how to save time and labor in on-the-job raising of building materials is now available to contractors. The folder, "Advance Hoisting Towers," tells of tower design, materials employed in manufacture, method of erection with self-contained locking device which eliminates loose parts, and explains the flexibility of components and specifications.—**Write Advance Scaffold Div., Beaver Art Metal Corp., Dept. C-19, Elwood City, Pa.**

CAT DW20—Caterpillar has just released a new 8-p booklet further describing the Cat wheel-type tractor, the DW20. It is liberally illustrated with on-the-job photos. Form number is 30728 and copies can be obtained from Cat dealers or direct from **Caterpillar Tractor Co., Peoria, Ill.**

MURPHY DIESEL—A new 48-p booklet offered by Murphy Diesel gives detailed descriptions of engineering design features to look for in diesel engines. Typical installations are shown in photograph form. Copies of this pocket-size booklet are free.—**Murphy Diesel Co., 5317 W. Burnham St., Milwaukee 14, Wis.**

NEW MOVIE—A new 16 mm color-sound film describing the Marion, 191-M shovel, claimed to be the world's largest and most powerful shovel, can be seen by addressing a request to **Marion Power Shovel Co., Marion, Ohio.**



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Bethlehem High-Strength Bolts are manufactured at our fasteners plant at Lebanon, Pa. They are heat-treated by a process of quenching and tempering, to meet the requirements of ASTM Specification A325.

A request to the nearest Bethlehem office will bring you our interesting booklet, "High-Strength Bolting for Structural Joints."

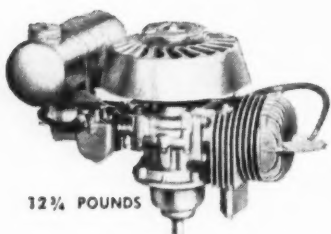
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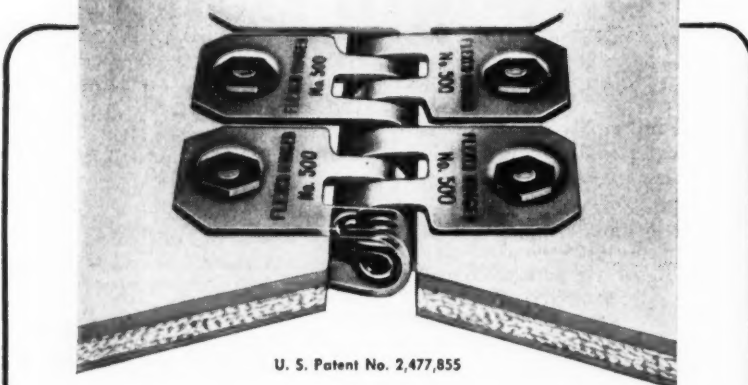
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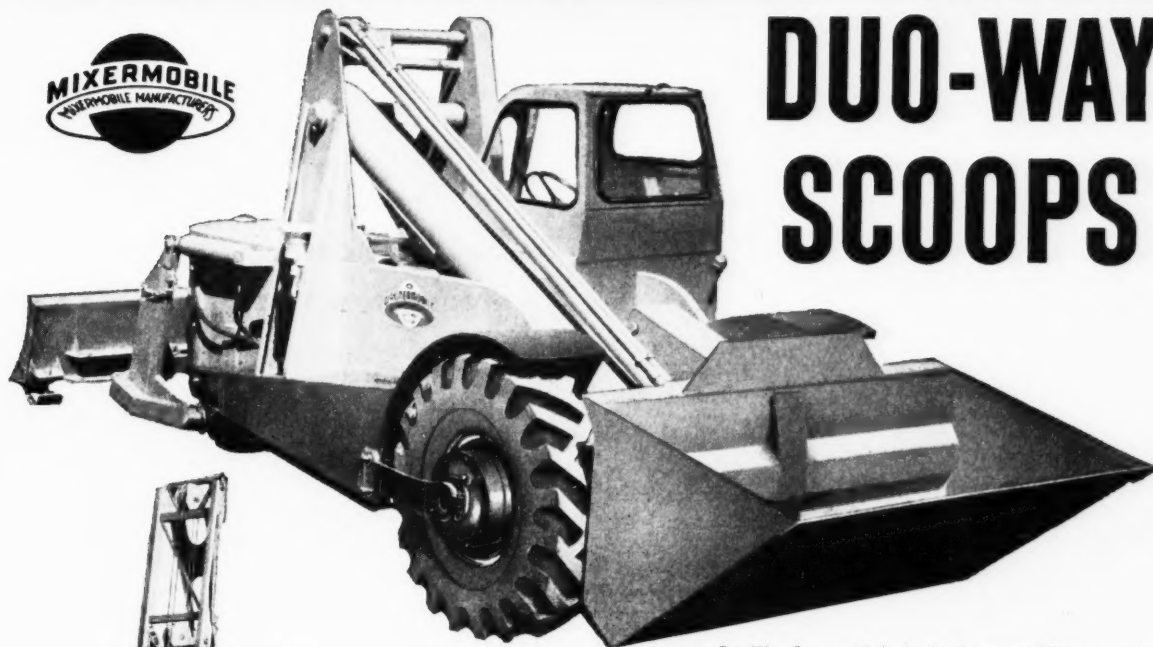
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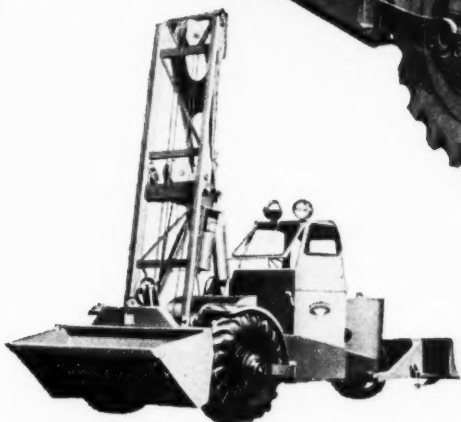
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DUO-WAY SCOOPS



Duo-Way Scoop with hydraulically powered boom, steering and dozer control is available in two sizes—DS3H shown above has 1½ cy. capacity, Model DS2H has 1 cy. capacity. Discharge height of both models is 9'-6" with standard boom.



Duo-Way Scoop Model DS2B, with cable lift, has hydraulically operated steering, dozer and track tilt controls. Track may be extended for high lifts, then folded back for convenient moving from job to job, or for lifting in low clearance areas. Lift operates with track in either position.

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The contractor encountered ground water and unstable soil in the construction of Fairview Road Trunk Sewer for Orange County Sanitation District No. 1, State of California. Progress due to this condition was retarded to a point where the job was almost in the red. The contractor installed a STANG Wellpoint System, and under STANG Supervision, the rate of progress was doubled.*

* Actual progress figures are on record.

- With the large sewer projects now being let thruout the country it will pay you to consult STANG on projects involving excavation in unstable, water-bearing soil so that you can take the GUESS out of your estimate.

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Telephone: Broadway 4362

NEW YORK, N. Y.
No. Two Broadway
Telephone Whitehall 3-0565

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MARVEL SYNCLINAL FILTERS

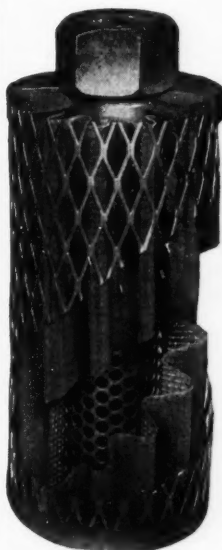
**INSURE
DEPENDABLE
PROTECTION
AND
SERVICE**



EUCLID 22 TON MODEL TD FEATURING HYDRAULIC BOOSTER STEERING. Marvel Synclinal Filters are installed in sump (indicated by arrow) as standard equipment to protect the entire hydraulic system against damage from the highly abrasive particles prevalent under the severe conditions to which "EUCS" are subjected.
(Photo Courtesy Euclid Road Machinery Co., Cleveland, Ohio)

IN HYDRAULIC AND LOW PRESSURE SYSTEMS

More and more manufacturers and users of hydraulic machines and other equipment with low pressure, non-corrosive liquid systems are depending on Marvel Synclinal Filters to protect their machines efficiency. Marvel Synclinal Filters are speeding production in a wide range of industries. They offer longer periods of operation between cleanings plus simplicity of design which enables ordinary workmen to quickly disassemble, clean and reassemble the filter on the spot. Line type operates in any position and may be serviced without disturbing pipe connections.



SUMP TYPE (Cutaway)

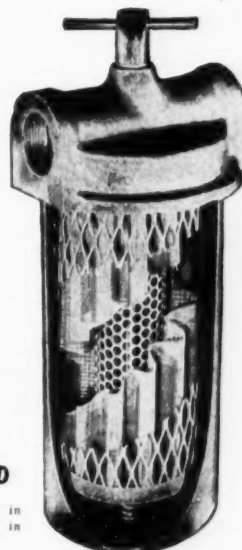
FACTS, Not Claims

Engineers decide on the basis of the record, on the basis of measurable facts rather than claims of the "campaign promise" variety. Here is a fact with meaning:

**Over 350
MANUFACTURERS
make
MARVEL
SYNCLINAL FILTERS
their O.E.M. Choice**

A SIZE FOR EVERY NEED

Sump and line type models available in capacities from 5 to 100 g.p.m. and in mesh sizes from 30 to 200.



LINE TYPE (Cutaway)

WATER FILTER

In response to the great demand we have adapted both our sump and line models for use in all water filtering applications. No changes have been made in the basic synclinal design.

MARVEL ENGINEERING COMPANY CME-10
625 W. Jackson Blvd.
Chicago 6, Illinois

Without obligation, please send me your Catalog containing complete engineering data on Marvel Synclinal Filters.

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

MARVEL ENGINEERING COMPANY

625 W. JACKSON BLVD., CHICAGO 6, ILL.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: "OPPORTUNITIES" :EQUIPMENT
BUSINESS: :USED OR RESALE

MAINTENANCE SUPERVISOR FOR CONSTRUCTION

CAN YOU USE THIS MAN'S EXPERIENCE?

EDUCATION	EXPERIENCE	PERSONAL
Graduate Automotive Engr.	18 Years Fleet Maintenance 15 Years Administrative Proven Executive Ability	Age 39 Married 3 Children References

Have made a study of the maintenance problems for the operation of light and heavy duty gas and diesel construction equipment. Responsible for planning, developing, testing and installing preventive maintenance programs; initiate and administer mechanic and apprentice shop training; evaluate maintenance methods, failure analysis, vehicle specifications; inventory control, tire cost per mile records; inspection procedure; unit cost systems; budget control; purchasing; estimating and labor negotiations.

I have an enviable safety record and excellent record with good personnel relations.

Present remuneration \$10,000 annually.

PW-8950, CONSTRUCTION METHODS & EQUIPMENT

1111 Wilshire Blvd., Los Angeles 17, Calif.

WANTED

PAVER SALES SPECIALIST

Leading manufacturer of paving equipment interested in man to act as paver sales specialist. Should have considerable experience in road paving and be familiar with all types of concrete pavers. Write

SW-9261, Construction Methods & Equipment
520 N. Michigan Av., Chicago 11, Ill.

WANTED

• Large manufacturer of construction equipment wants man with considerable field experience in construction work . . . buildings, tunnels, bridges, etc., with particular emphasis on concrete placement. Estimating experience advantageous. Sales experience preferred but not necessary.

Excellent salary and benefits. Write

P-9259, Construction Methods & Equipment
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- 4—Vulcan #2 Pile Hammers with Standard and McDermid Base
- 2—Vulcan #3 Pile Hammers with Standard Base
- 4—McKiernan-Terry #2 Sheeting Hammers
- 1—Model 200 D Rex 8" double Pumpcrete machine with Pug Mill Remixer Electric driven 220/440 volt, 3 phase, 60 cycle with approx. 400 ft. of pumpcrete pipe and fittings
- 1—30 Ton Wiley Type F Steel Stiff-Leg derrick with 60 ft. boom
- 1—15 Ton Terry Steel Stiff-Leg derrick with 65 ft. boom
- 1—10 Ton Steel Stiff-Leg derrick with 60 ft. boom
- 1—Unused Model 40 Ingersoll Rand Drill Sharpener

MAHONEY-CLARKE, INC.

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SALE

160-B Pumperette Machine Serial #CZ 397 used plus 330 feet straight 7" pipe and numerous fittings. Price complete \$5,500.00. F.O.B. our shop —L.I.C., New York.

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Tel. No. ST 4-1541

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Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details

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CONSTRUCTION CONSULTANTS
411 So. 5th Ave., Lake Worth, Florida

EMPLOYMENT

POSITION VACANT

EXECUTIVE OF 11 years experience, with emphasis in field of construction, seeks position where he can prove ability to effect appreciable savings by direction, coordination and execution of policy. Background includes extensive knowledge of government procedures built on five years Federal service (1942-47), administering labor relations and personnel procedures for cost-plus-fixed fee contractors. Complete resume available, but prefer immediate interview. PW-9383, Construction Methods & Equipment.

BUSINESS OPPORTUNITIES

For Sale: Well established construction machinery business, representing top equipment manufacturers in northern Louisiana. Presently doing at the rate of over \$750,000.00 annually. Volume limited only by amount of capital available. This business is thoroughly proved with an excellent profit record. Minimum \$100,000.00 required to handle. Full and complete information furnished any one who is genuinely interested. Contact E. C. Ray, Owner, 126 Atlantic Ave., Shreveport, La.

EQUIPMENT—used-surplus

FOR SALE

Used concrete pavers, truck mixers, and pumpcrete. 19 Rector Street, Room 1205, New York City, N. Y. Phone: WHITEhall 3-6141.

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CONSTRUCTION Methods and Equipment

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HOWARD T. OLSEN, Business Manager

Sales Representatives: H. T. Buchanan, 330 W. 42nd St., New York; F. G. Hudson, Knox Bourne and David J. McGrath, 520 N. Michigan Ave., Chicago; R. E. Dorland, 68 Post Street, San Francisco; W. C. Bradford, 1510 Hanna Bldg., Cleveland; W. E. Donnell, Continental Bldg., St. Louis; H. L. Keeler, 1111 Wilshire Blvd., Los Angeles; Robert H. Sidur, 1321 Rhodes-Haverty Bldg., Atlanta; James Cash, First National Bank Bldg., Dallas. Other Sales Offices: Architects Bldg., 17th and Sansom Sts., Philadelphia; 738 Oliver Bldg., Pittsburgh; 856 Penobscot Bldg., Detroit; 350 Park Square Bldg., Boston 16; 95 Farringdon St., London, E.C. 4.

STOP

WASTING MONEY BY THE TRUCKLOAD



Go White!

YOU NEED the most efficient kind of trucks for today's schedules . . . today's operating costs . . . today's work conditions.

That's why you see so many Whites these days in excavating service and dump operations.

Tailored to the exact needs of your work, Whites have the power and the rugged reliability to get more work done . . . in less time . . . at lower cost.

Find out how Whites save money in *your* kind of business.

THE WHITE MOTOR COMPANY • Cleveland 1, Ohio

For more than 50 years the greatest name in trucks

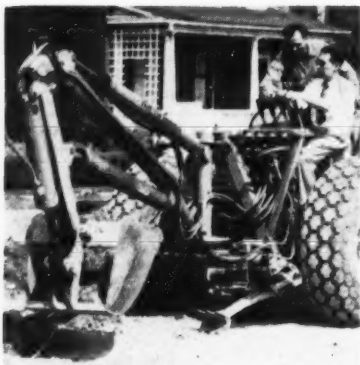


White

Check these White advantages...

- ✓ **WIDE RANGE** of models to meet every excavating operation—4 and 6-wheel trucks and tractors for end or side dump.
- ✓ **WHEELBASES** as required. Heavy duty springs, front shock absorbers, rock-lug tires and other special units available as required.
- ✓ **SINGLE** drive axle units with single or double reduction or two-speed axles.
- ✓ **ENGINES**—gasoline or diesel-powered.
- ✓ **TANDEM** drive units with double reduction axles.
- ✓ **TRANSMISSIONS**—various transmissions and auxiliary transmissions to meet local operating conditions.

Methods Memo . . .



ARM CHAIR EDITORS have no place on the staff of CONSTRUCTION METHODS AND EQUIPMENT. Here again is unsolicited proof that we climb on the equipment and run it ourselves. The novice operator getting last minute instructions before taking over is one of our editors, Ralph H. Lewis, and the action took place recently in Hanover, Pa., where Ralph spent some time getting the material for the article on Sheppard Diesel starting on page 110 of this issue.

RECENTLY WE VISITED an unusually difficult construction operation in which a number of different contracting firms were involved. It was billed as a spectacular engineering feat, which the general press was invited to witness also. As it turned out, one of the most spectacular (and amusing) aspects of the job was the jockeying of all the outfits for newspaper credit. Reporters were repeatedly buttonholed by contractors' and owner's representatives, each of whom told a different story as to his firm's part in the job. **Result:** Confused reporting and incomplete or incorrect newspaper stories that left a bad taste in some corporate mouths. Actually, the job *was* unusually difficult and spectacular. And, in its successful completion, there would have been enough glory to go all the way around—if the companies involved had only cooperated as intelligently on their public relations as they did on the actual construction.

ON THE OTHER HAND factually correct technical articles about his own jobs can be of good help to a contractor. For example, an insurance agent writes, "One of my main activities is arranging performance bonds for contractors. The equipment and experience of a contractor on unusual type work is of great im-

portance in arranging for these bonds, and bonding companies consider (the type of work in question) particularly hazardous. I have done business with X Construction Co. for a number of years and have personally known of this (private) work they are doing, as reported in your article. However, as bonds were not required, the bonding companies did not know of X's experience in this type of construction. Almost simultaneously with the appearance of your article, X decided to bid to the State on a similar job and asked me to arrange bond. I anticipated the necessity of showing experience in this line of work and, having just read the article with great interest and fortified with copies of it, I was able to obtain approval of the bond with great dispatch. Your well-written article describing equipment, dimensions, quantities, organization, performance, etc., which was photographically documented, was of the utmost help to me."

TRAGEDY in the North Country wilderness: On the Sherridon-Lynn Lake railroad project, described on page 62 in this issue, dynamite magazines were located near the camps, but always behind a hill, or otherwise protected. One Sun-

day afternoon, two construction workers went bear hunting, flushed a big fellow, and trailed him through the brush without realizing they were working back toward camp.

Cornering the brute in a grove of small trees, the hunters let fly with both guns—a shot clipped the powder magazine and 45,000 lb of dynamite exploded. The bear was killed, so were the two hunters. Fortunately, although the nearby camp was leveled by the blast, no further casualties resulted. **Moral:** Do your hunting away from powder magazines.

WHILE COVERING this interesting project in Northern Manitoba, the calendar slipped back eleven years. Yep, we were right back on the Alcan Highway in 1942—same muskeg and rock, same north country wilderness, same knot-topped stunted trees denoting permafrost below. One difference—contractor's camps, though accessible only by float planes, appeared much better than most of the Army camps along the Alcan back in '42. Steak instead of Spam and Vienna sausage, if you Vets know what we mean.

On the Cover . . .

Final lap of a half-mile Barber-Greene conveyor run across the American River Valley at Folsom Dam, near Sacramento, Calif., is this Flight No. 5, a 30-in. B-G conveyor 610 ft long rising to top of concrete plant. All aggregates for the 1,300,000-yd concrete spillway section of the dam are processed 4 mi away at the pit, and are hauled by truck to storage bins at east bank of the gorge. From here they are picked up, as needed, and transported by conveyor flights, some on suspension bridges, to the plant on top of the west bank. All flights are enclosed to reduce heat absorption in the hot California sun. The concrete plant, rated at 240 cu yd per hr, includes a Johnson batcher and three 4-yd Koehring mixers. The aluminum-clad building behind the plant houses a 1,035-ton York ice plant for cooling the mix. Merritt-Savin, contractors on the project, which also includes 9 million yd of rolled earth fill, set up a trestle with hammerhead and revolving cranes for concrete distribution (CM&E, March '53, p. 501, but two bad floods

CONSTRUCTION

METHODS AND EQUIPMENT

October 1953



last spring damaged the trestle to such extent that it will not be back in service until November. Meanwhile, concrete is being placed by truck-hauled 4-yd buckets and cranes. Dave Stinson is project manager for Merritt-Savin.



Boeing Airplane Co., Wichita, Kansas. Pozzolith Concrete used in apron and hangar. Constg. Engr. — Wilson & Co., Salina, Kansas; Hangar Contr.—Manhattan Construction Co., Inc., Muskogee, Okla.; Hangar concrete supplied by Walt Keeler Concrete Co., Wichita, Kansas; Apron Contr.—Peter Kiewit & Sons Co., Wichita, Kansas, who also produced the concrete for apron.

120,000 Cu. Yds. of Durability... POZZOLITH CONCRETE

Low unit water content and increased durability are among the important reasons for the wide use of Pozzolith Concrete in such projects as Boeing's 4,000' x 800' apron and many other types of exposed concrete work.

In tests conducted by the Nation's Highest Testing Authority, using a range of cements typical of all U. S. cements, Pozzolith Concrete specimens had up to 400% greater resistance to freezing and thawing than ordinary concrete.

Pozzolith, cement dispersion, provides maximum durability — with maximum economy — because it (1) *reduces unit water content* by approximately 15% (2) entrains the optimum amount of air and (3) fully complies with the water-cement ratio law — basis of ACI and ASTM procedures of design, specification and production.

Full information on Pozzolith and "see-for-yourself" demonstration kit supplied on request . . . without cost or obligation.

CEMENT DISPERSION ALSO KEY TO SUPERIORITY OF THESE MASTER BUILDERS PRODUCTS

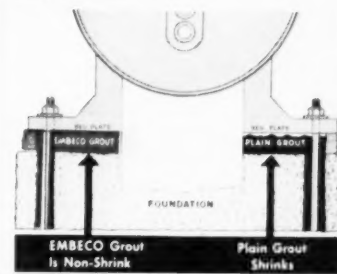
MASTERPLATE . . .

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also spark-safe, non-dusting and easy-to-clean. Non-colored and colored. For new floors and resurfacing.



EMBECO . . .

Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, level, lasting bedplate contact . . . (3) helps avoid costly shutdowns.



the **MASTER BUILDERS** *Co*



Subsidiary of American-Marietta Company

TORONTO, ONTARIO



Slattery Contracting Co., Inc. uses TIMKEN® carbide insert bits for faster drilling, fewer bit changes on New Jersey highway job

IN drilling operations on the new road connecting the George Washington Bridge and the Palisades Interstate Parkway, the Slattery Contracting Co., Inc. gets increased drilling speed with fewer bit changes by using Timken® carbide insert bits. They are most effective for drilling extremely deep holes in the New Jersey trap.

Timken carbide insert bits always give highest speed through hard and abrasive ground. And they're most economical for constant-gage holes, small diameter blast holes, extremely deep holes.

But they're *not* your best solution for all your drilling problems!

For ordinary ground, Timken multi-use bits are most economical. With correct and controlled reconditioning, they'll give the lowest cost per foot of hole when full increments of steel can be drilled.

Most important of all, both Timken carbide insert and multi-use bits are interchangeable in the same thread series. A wide range of different Timken bits fit the same drill steel! As the ground changes, you change bits quickly, easily—right on the job!

Both Timken carbide and multi-use bits are made from electric furnace Timken fine alloy steel, and have

special shoulder unions that protect threads from drilling impact.

For the bit type best suited for your drilling requirements—whether multi-use, carbide insert, or both—call on the Timken Rock Bit Engineering Service. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken threaded multi-use rock bit



Timken threaded carbide insert rock bit

TIMKEN

**your best bet for the best bit
 ... for every job**